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SIERRA LEONE:

SUPPLY CHAIN ASSESSMENT FOR ARV DRUGS AND HIV TEST KITS

NATIONAL HIV/AIDS SECRETARIAT/ MINISTRY OF HEALTH AND SANITATION

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Abstract
In April 2007, the National HIV/AIDS Secretariat (NAS) with technical assistance from the USAID | DELIVER PROJECT funded by USAID | West Africa, conducted an assessment of the supply chains for managing ARV drugs and HIV test kits in support of the national response to HIV/AIDS in Sierra Leone. This report presents the assessment findings and the short- and medium-term recommendations for addressing the supply chain issues and challenges identified and for improving overall supply chain management of ARV drugs and HIV test kits for the national HIV/AIDS program.

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CONTENTS

ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ARG	Health Sector AIDS Response Group
ART	Antiretroviral Therapy
ARVs	Antiretroviral Drugs
CDC	U.S. Centers for Disease Control and Prevention
CHO	Community Health Officer
CMS	Central Medical Stores
ELISA	Enzyme Linked Immunosorbent Assay
FDC	Fixed-dose Combination drug
FEFO	First to Expire-First Out
GF	Global Fund
GFATM	Global Fund to Fight AIDS, TB and Malaria
GOSL	Government of Sierra Leone
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
ICB	International Competitive Bidding
ICRC	International Committee of the Red Cross
IDA	International Dispensary Association
LIB	Limited International Bidding
LLINs	Long Lasting Insecticide-treated Nets
LMIS	Logistics Management Information System
MCH	Maternal and Child Health
M&E	Monitoring and Evaluation
MOHS	Ministry of Health and Sanitation
MOS	Months of Stock
MSF	Médecins Sans Frontières
NAS	National HIV/AIDS Secretariat
NEML	National Essential Medicines List
NGO	Non-governmental Organization
OI(s)	Opportunistic Infection(s)

PHU	Peripheral Health Unit
PLWHA	People Living With HIV/AIDS
PMTCT	Prevention of Mother-to-Child Transmission of HIV
PEP	Post-exposure Prophylaxis
PR	Principal Recipient
SHARP	Sierra Leone HIV/AIDS Response Project
SOH	Stock on Hand
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
VCCT	HIV Voluntary Confidential Counselling and Testing
WB/MAP	World Bank Multi-sectoral AIDS Project
WHO	World Health Organization

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Richard B. Mansaray	Data Entry Clerk, Laka Warehouse, NAS
Abdul Karim Kargbo	Stores Manager, Laka Warehouse NAS/MOHS

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In addition, the authors would like to acknowledge and express special thanks to USAID | West Africa for funding this activity in support of the Government of Sierra Leone's response to the HIV/AIDS epidemic.

It is hoped that the findings and recommendations from this assessment will be useful in two ways; first in providing concrete steps for addressing the immediate supply chain issues and challenges in managing ARV drugs and HIV test kits for the national program, and secondly, as guidance for strengthening overall supply chain management capacity at the National HIV/AIDS Secretariat and the Ministry of Health and Sanitation to be able to ensure the continuous availability of these products to all who need them, when and where they need them, and ultimately, to achieve the long-term sustainability and success of the national program.

EXECUTIVE SUMMARY

Major Accomplishments

This supply chain assessment was successfully completed with outstanding support from Dr. Brima Kargbo, Acting Director of the National HIV/AIDS Secretariat (NAS), and the nine assessment team members selected from NAS. The in-country portion of the assessment was conducted from April 2-19, 2007. During this time, the USAID | DELIVER PROJECT advisors enjoyed the full cooperation and collaboration of their counterparts during the preparatory activities in Freetown, as well as during and after the field visits to districts and peripheral health units (PHUs). Assessment activities included collection and review of program planning, policy and technical documents (see the *References* section of this report); training and piloting of the field assessment tools; site visits to conduct interviews with facility staff, collect data and observe storage conditions and stockkeeping practices; and review and analysis of the assessment findings. Productive information gathering and sharing through one-on-one interviews and stakeholder joint discussion groups in Freetown provided a wealth of information, experiences and insights that also informed the findings and recommendations of this assessment.

The broad range of activities undertaken for this assessment were completed in a short timeframe for an activity of this scope while still allowing for valuable and pertinent information gathering and analysis. While an in-depth quantitative analysis was not conducted at this time, the quantitative data that was collected, together with the comprehensive qualitative analysis provided in this report, can be used as a baseline for future program planning, monitoring and evaluation.

Summary of Assessment Findings and Recommendations

ART and HIV testing services were initiated under the Government of Sierra Leone's national response to the HIV/AIDS epidemic in 2004 with support from the World Bank/MAP project. Since then, ART and HIV testing services have been scaled up and integrated within the existing structure and activities of the Ministry of Health and Sanitation (MOHS) under the direction and guidance of the National HIV/AIDS Secretariat (NAS) with support from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM).

As of April 2007, a total of 55 ART sites, 53 VCCT sites and 90 PMTCT sites were listed with the NAS Monitoring and Evaluation Unit (M&E Unit). All ART sites with few exceptions are also VCCT sites. Approximately half of the PMTCT sites are also VCCT sites and ART sites.

In order to be able to support continued scale-up of the national response to HIV/AIDS and to ensure the long term sustainability and success of the national program, it will be critical for NAS, the MOHS, and other stakeholders to be able to finance, forecast/quantify, procure, and deliver a continuous supply of quality products to the people that need them, when and where they need them. This will require a re-design and strengthening of the current logistics systems for managing ARV drugs and HIV test kits in the country, and institutionalization of logistics management skills and technical capacity in forecasting, quantification and procurement planning of ARV drugs and HIV test kits at NAS and the MOHS.

The assessment findings documented in this report highlight the experiences, the achievements, and the issues and challenges faced by the national HIV/AIDS program in managing the supply chains for ARV drugs and HIV test kits. The following is a summary of the recommendations detailed in the body of this report:

The short term recommendations for addressing the immediate supply chain issues and challenges described in section *III. Findings and Analysis* of this report include:

- Implement basic stockkeeping practices at the central level and at all facilities to ensure the quality of the ARV drugs and HIV test kits in stock, and to be able to monitor the quantities of stock on hand in the program,
- Secure additional storage space, and improve cold chain storage and transport of commodities to accommodate program expansion and to ensure the quality of the commodities being procured, distributed and used,
- Improve knowledge about ARV drugs and management of ARV drug regimens for ART providers and staff responsible for management of the commodities,
- Conduct a logistics system design workshop to design a standardized LMIS and a maximum/minimum inventory control system for collecting, reporting and analyzing logistics data to be able to efficiently and effectively monitor and manage consumption and stock levels of ARV drugs and HIV test kits in the country and maintain a continuous supply of products while avoiding overstocking and stockouts,
- Conduct a national quantification exercise to introduce and build capacity in forecasting methodologies and tools for quantification and procurement planning of ARV drugs and HIV test kits,
- Create a Logistics Working Group to address the need for coordination of multiple funding sources, procurement mechanisms, and the in-country distribution of HIV/AIDS commodities amongst stakeholders and implementing partners to be able to ensure a continuous supply of the right quantities of the right products into the country.

The medium-term recommendations to achieve full implementation of the logistics management information system and the maximum/minimum inventory control system; institutionalization of logistics management capacity at NAS and the MOHS; and long term sustainability of the program include:

- Develop and disseminate standard operating procedures for management of the logistics system for ARV drugs and HIV test kits,
- Develop and implement a national roll-out plan for training, piloting, and implementing the LMIS and the maximum/minimum inventory control system for ARV drugs and HIV test kits,
- Institutionalize the use of established forecasting methodologies and tools for quantification of ARV drug and HIV test kit needs,
- Establish a process for medium-term program planning and resource mobilization for commodity procurement based on a two year forecast period,
- Conduct a national quantification exercise every six months to review and update the two year forecast of commodity requirements, procurement plans and shipment delivery schedules. This will be critical to be able to respond to changes in demand for products during program scale-up.
- Develop a national Commodity Security Strategy to ensure long-term sustainability of financing for all HIV/AIDS commodities.

I. BACKGROUND AND PURPOSE OF THE ASSESSMENT

The supply chain assessment for ARV drugs and HIV test kits for Sierra Leone was funded by USAID | West Africa and conducted with technical assistance from the USAID | DELIVER PROJECT. This assessment was the first in a set of activities planned 1) to assist the National HIV/AIDS Secretariat (NAS) and the Ministry of Health and Sanitation (MOHS) in identifying and addressing the supply chain issues and challenges affecting the continuous availability and quality of ARV drugs and HIV test kits for the national program; and 2) to design interventions for strengthening supply chain performance and for building capacity in supply chain management of ARV drugs and HIV test kits. At the time that the Scope of Work for this activity was developed, NAS had already identified challenges in the areas of forecasting, inventory management, and the need for a commodity information system for managing HIV/AIDS commodities. The original Scope of Work is attached to this report as *Appendix A. Scope of Work*.

Purpose of the Technical Assistance

The purpose of this technical assistance was to assist NAS and the MOHS of Sierra Leone in conducting an assessment of the supply chains for managing ARV drugs and HIV test kits including the current capacity at NAS for forecasting, financing, procurement, inventory management, and distribution of ARV drugs and HIV test kits for the national program.

The assessment activities focused on the following areas of supply chain management:

- policy and regulatory guidelines for selection, registration and use of ARV drugs and HIV tests,
- methodologies and capacity at the National HIV/AIDS Secretariat (NAS) for forecasting, quantification, procurement and supply planning for ARV drugs and HIV test kits
- availability and sustainability of financing for procurement of ARV drugs and HIV test kits,
- inventory management procedures, distribution systems and storage conditions for ARV drugs and HIV test kits,
- management information systems for monitoring and managing data on consumption and stock levels of ARV drugs and HIV test kits for the national program

Based on the assessment findings, USAID | DELIVER PROJECT advisors were to develop recommendations to:

- address specific supply chain issues and challenges that are affecting the availability and quality of ARV drugs and HIV test kits, and
- improve overall supply chain management of ARV drugs and HIV test kits for the national program.

II. ASSESSMENT METHODOLOGY

This assessment provides a descriptive and qualitative analysis of the current design and functioning of the supply chains for ARV drugs and HIV test kits for the national HIV/AIDS program. While an in-depth quantitative analysis was not conducted at this time, the quantitative data that was collected, together with the comprehensive qualitative analysis provided in this report can be used as a baseline for future program planning, monitoring and evaluation.

A. ASSESSMENT TEAM

NAS was asked to assist in the selection of assessment team members who were knowledgeable about the ART and HIV testing services and who could be available throughout the in-country portion of the assessment from April 2 -19, 2007. Nine assessment team members were selected to participate in the field visits to interview facility staff, collect data, and to observe and document facility storage conditions, stockkeeping practices, and stock levels of ARV drugs and HIV test kits.

Three field assessment teams of four people on each team were composed of logistics advisors from the USAID | DELIVER Project, Community Health Officers (CHOs) who are district HIV/AIDS Counselors, the Acting ART/VCCT Program Coordinator, and central level staff from the NAS Monitoring and Evaluation Unit and the central warehouse for HIV/AIDS commodities in Laka. For the composition of each of the three teams, please see *Appendix D. Schedule of Field Visits* attached to this report. Previous to the field visits, the assessment teams reviewed, piloted and finalized the facility assessment tools in Freetown and planned the field visits in Western Area and the six districts selected for the assessment. After the week of field visits, the team members returned to Freetown to participate in the discussion and analysis of the assessment findings that were presented at the final stakeholder debriefing.

B. ASSESSMENT TOOLS

Qualitative and quantitative data was collected through the use of two standardized assessment tools developed for the facility visits; one for HIV test kits, and one for ARV drugs. The tools were designed to guide the interview questions and discussion with staff about the ART and HIV testing services provided at each facility, and to document information on the use of ARV drugs and HIV test kits, the commodity data collection and reporting systems, and the ordering, receiving, storing and distribution of ARV drugs and HIV test kits throughout the in-country supply pipeline from the central warehouse at Laka to districts, and from districts to peripheral health units (PHUs). At each site, specific data was collected on stockkeeping practices (e.g. use of stock cards, quantities of stock on hand, quantities and dates of expired products, frequency and duration of stockouts), and observations of storage conditions and practices. A range of clinicians, adherence counselors, community health officers, pharmacy technicians/dispensers, nurses, MCH Aides and laboratory technicians were interviewed at government hospitals and PHUs. Please see *Appendix H. Facility Level Assessment Tool – HIV Test Kits* and *Appendix I. Facility Level Assessment Tool – ARV Drugs* attached to this report.

In addition, prepared discussion topics and questions were used to guide and inform structured one-on-one interviews and stakeholder joint discussion groups with key policymakers, program managers,

procurement specialists, donor agencies, implementing partners, M & E specialists, and warehouse managers at the central level in Freetown.

C. SELECTION OF ART, VCCT AND PMTCT SITES

As of April 2007, a total of 55 ART sites, 53 VCCT sites and 90 PMTCT sites were listed with the NAS Monitoring and Evaluation Unit. All ART sites with few exceptions are also VCCT sites. Approximately half of PMTCT sites are also VCCT sites and ART sites. See *Appendix E. List of ART, VCCT and PMTCT Sites – April 2007* attached to this report.

The USAID | DELIVER PROJECT requested assistance from NAS in selecting the ART sites and HIV testing sites to visit for the assessment to reflect a representative cross-section of high vs. low volume service delivery sites; well-functioning vs. poorly performing sites; urban, semi-urban vs. rural peripheral locations; and a variety of geographical areas. The number and location of the sites in the districts were selected so that all sites could be reached and assessed by the three teams within one week.

In selecting the sites for the assessment, it was also important to follow the in-country supply chain for ARV drugs and HIV test kits from the central level receiving and storage facility to the intermediate level, down to the lowest level facilities receiving the commodities and providing services. In this case, this included facilities from the Laka Warehouse to Connaught Referral Hospital in Freetown, to district government hospitals and PHUs in each of the six districts selected for the assessment.

Within the time and resource constraints for the assessment, a total of 17 facilities were visited in Western Area and in six of the 12 districts of the country including:

- Connaught Referral Hospital, UMC Hospital, and Rokupa Government Hospital in Western Area
- Laka Warehouse and the National Reference Laboratory in Laka
- One district hospital and one PHU in each of the six districts visited:
    - Northern Province: Kambia, Port Loko, Bombali, and Tonkolili Districts
    - Eastern Province: Bo and Kenema Districts

For a complete list of the facilities visited, please see *Appendix D. Schedule of Field Visits* attached to this report.

D. ASSESSMENT ACTIVITIES

Central Level Activities

During the first and third weeks of the in-country portion of the assessment, the USAID | DELIVER PROJECT logistics advisors conducted structured one-on-one interviews and stakeholder joint discussion groups with MOHS and NAS directors, program coordinators and procurement managers, donor agencies and other implementing partners, monitoring and evaluation (M&E) specialists, and warehouse managers in Freetown. The first week was also spent training the assessment team members in the purpose and use of the field assessment tools for ARV drugs and HIV test kits, piloting the tools at ART and HIV testing sites in Freetown, adapting the final version of the tools that were used for the facility assessments, and finalizing administrative and logistical arrangements for the field visits.

The field visits to the six districts were conducted during the second week of the assessment. After the return to Freetown, the three field assessment teams met to compile, review and analyze the findings

which were incorporated into a presentation of preliminary assessment findings and recommendations for stakeholders at a final Stakeholder Debriefing conducted by the USAID | DELIVER PROJECT advisors at the end of the technical assistance visit. Please see *Appendix J. Stakeholder Debriefing* attached to this report.

Field Assessment Activities

Three assessment teams of four people traveled to the six districts selected for the field visits to interview facility staff about the ART and HIV testing services provided and to document information on the use of ARV drugs and HIV test kits, the commodity data collection and reporting systems, and the ordering, receiving, storing and distribution of ARV drugs and HIV test kits at the facility. After the interviews, the assessment team members asked to observe and document storage conditions, stockkeeping practices, and stock levels of ARV drugs and HIV tests at each facility. Facility assessments were conducted in six district hospitals and five peripheral health units. While visits to six peripheral health units had been scheduled and confirmed in advance, the key person at one peripheral health unit could not be located on the day of the visit and had not made arrangements for other staff to meet with the assessment team.

The different cadres of staff interviewed at the ART, PMTCT and HIV testing sites included clinicians, Community Health Officers (CHOs), HIV/AIDS counselors, adherence counselors, MCH nurses and aides, laboratory technicians, and pharmacy technicians/dispensers.

For more detail on the day-to-day schedule of activities please see *Appendix C. Consultant Itinerary 1st – 19th April 2007* attached to this report.

III. FINDINGS AND ANALYSIS

Following a brief introduction and description of the ART and HIV testing services currently being provided in Sierra Leone, an analysis and discussion of the assessment findings is presented by area of supply chain management for ARV drugs and HIV test kits as follows:

- product selection, registration and use;
- forecasting and quantification of commodity requirements;
- financing for commodity procurement;
- logistics management information system;
- inventory management;
- facility ordering procedures;
- distribution and transport;
- storage conditions and stockkeeping practices.

Within each area of supply chain management, the strengths of the current policies, systems and procedures for managing ARV drugs and HIV test kits for the national HIV/AIDS program of Sierra Leone are highlighted, and the key supply chain issues and challenges identified during the assessment are discussed.

Short and medium-term recommendations to address the supply chain issues and challenges affecting the quality and the availability of ARV drugs and HIV test kits are proposed in the following section *IV. Recommendations* of this report.

Introduction

The vast majority of ART and HIV testing services and commodities are provided for free through the public sector health system at central and district level government hospitals and peripheral health units. Through a public-private partnership initiative, NGOs, faith-based organizations and private facilities that provide ART and HIV testing services may register with NAS to receive ARV drugs and HIV test kits for free. At the time of the assessment, seven non-governmental facilities were confirmed to be receiving ARV drugs and/or HIV test kits through NAS. As of April 2007, a total of 55 ART sites, 53 VCCT sites and 90 PMTCT sites were listed with the NAS M&E Unit. All ART sites with few exceptions are also VCCT sites. Approximately half of the PMTCT sites are also VCCT sites and ART sites.

While provision of HIV/AIDS services is reportedly integrated at the facility level, there appears to be some verticalization in service provision and supply of HIV/AIDS commodities. The HIV/AIDS counselors (CHOs, adherence counselors, nurses) interviewed for the assessment at the central and district level facilities receive their salaries through NAS, not the MOHS, and are exclusively dedicated to the provision of HIV/AIDS related services. Other staff, e.g. pharmacy technicians, laboratory technicians and MCH Aides, are employees of the MOHS and may perform HIV/AIDS related activities amongst their other responsibilities. HIV/AIDS commodities, in this case ARV drugs and HIV test kits, are ordered, collected/distributed, received, stored and used separately from other commodities at health facilities.

1. ART Services

Triple drug therapy with antiretroviral drugs has been provided in Sierra Leone since 2005. An estimated 1,416 patients were reported to be on ART as of the end of December 2006, about half of whom are receiving treatment at Connaught Government Hospital in Freetown (761 as of April 2007). The majority of patients on ART nationally (60% - 70%) are reported to be on the preferred first line regimen of stavudine 30mg or 40mg, plus lamivudine 150mg, plus nevirapine 200mg using the fixed-dose combination drug, Triomune 30 or Triomune 40. The second largest proportion of ART patients are reported to be on zidovudine 300mg plus lamivudine 150mg plus nevirapine 200mg using the fixed-dose combination drug Duovir-N, with the next largest group of patients on alternate first line regimens where nevirapine has been substituted with efavirenz, and very few patients on second line regimens, mostly at Connaught Referral Hospital in Freetown. National data was not available to confirm the actual numbers of patients on ART by ARV drug regimen at the time of the assessment. Data collected from the facilities visited in Western Area and the six districts for the assessment indicate 1,093 adult patients currently on ART, exclusively on Triomune 30, Triomune 40, Duovir-N or Duovir plus Efavirenz.

Other ARV drug regimens being prescribed include adjustments of first line regimens for HIV/TB co-infected patients (increased dosages of Efavirenz), and regimens for short-term ARV prophylaxis for HIV positive pregnant mothers and their infants, and for post-exposure prophylaxis.

Pediatric ART appears to be limited to 36 pediatric patients reportedly on treatment at Connaught Government Hospital with a few children confirmed to be on ART at Kenema and Kambia District Hospitals bringing the total to 41 as of the time of the assessment visit. Children that had initiated ART at other facilities visited for the assessment had either interrupted treatment for different reasons, or had been lost to follow up. This figure does not include children on ART in the other six districts that were not included in the assessment. Unfortunately, due to time constraints, the assessment team was not able to schedule an additional visit to Connaught Government Hospital to interview staff about the pediatric ART services and to assess how the pediatric ARV drugs are being managed.

At the sites visited for the assessment, there were no eligible patients on a waiting list to receive ARV drugs other than patients in the process of completing treatment for TB before initiating ART. The assessment findings indicate that the ARV drug supply has not been an impediment for eligible patients to initiate therapy.

All of the ART sites visited for the assessment reported a steady increase in the number of new ART patients from 2005 to 2006 with as much as a 50% increase by the first quarter of 2007. Program targets for enrollment of new patients on ART over the next two years bring the total to close to 5,000 patients estimated to be on ART by the end of 2009. There is still a long road ahead for scaling up the HIV/AIDS response to be able to meet the government of Sierra Leone's goal to ensure universal access to treatment and achieve at least 50,000 PLWHAs on treatment by 2010 (National HIV/AIDS Strategic Plan 2006-2010).

2. HIV Testing Services

The bulk of the HIV testing services in Sierra Leone are being provided to support VCCT, PMTCT and blood transfusion services at government hospitals and PHUs, with some additional testing being conducted for clinical diagnosis, HIV surveillance at ANC sites, and for training purposes. HIV testing was being provided through PMTCT services at 90 health facilities at the time of the assessment, 53 of which also provide HIV testing through VCCT services for the general population. (See *Appendix E. List of ART, VCCT and PMTCT Sites*). A total of 50,000 people are reported to have been tested for HIV in 2005. Data on total number of people tested for HIV for all purposes in 2006 was not available at the

time of the visit. All facility staff interviewed during the assessment visits confirmed a significant increase in the number of people accessing HIV testing services in the first quarter of 2007 and the trend is expected to continue. HIV testing services are expected to continue to expand rapidly over the next 3 years towards the goal of testing 40% of the population according to the National HIV/AIDS Strategic Plan for 2006-2010. With a national population of close to 5 million, that translates to 2 million people to have been tested for HIV by 2010.

Uptake of HIV testing through PMTCT services has been rapid with the initiation and integration of PMTCT within existing ANC services since 2006. Recently adjusted targets for 2007 are to test up to 20% of all ANC clients in the country, approximately 50,000 pregnant women by the end of 2007, with the longer term goal of providing HIV testing for 80% of all ANC clients by 2010.

In contrast, VCCT services which are targeted at the general population and are offered at many of the same facilities providing PMTCT services, were characterized as "unpredictable and fluctuating" by facility staff who cited the difficulties encountered in trying to convince potential clients to accept HIV counseling and testing services. Even with these barriers to testing, facility staff interviewed at the HIV testing sites reported across the board that, not only are the numbers of clients seeking and receiving HIV testing rising, but the prevalence of those being tested is higher than in earlier years.

3. Quality Control Testing

A quality assurance program for HIV testing through the national reference laboratory (NRL) was started in December 2006. Currently 10 laboratories out of a total of 104 laboratories in the country (this includes government, mission and private laboratories) participate in internal quality control testing. The plan is to expand quality control testing to re-test all positive blood samples and 10% of negative blood samples from all HIV testing sites in the country on a monthly basis. The national reference laboratory currently provides vacutainers to the 10 participating district and PHU testing sites for collection and transport of blood specimens for quality control testing at the NRL. In addition, the NRL also participates in a yearly external quality control assessment.

Standard operating procedures for the collection and transport of blood specimens for internal quality control are currently being developed at the national reference laboratory and will need to be disseminated and implemented at all the HIV testing sites. Plans for the quality assurance program also include selection and use of ELISA assays and a separate testing algorithm for the internal quality control testing performed at the NRL, and expansion of the use of ELISA assays at the national Blood Bank and at the provincial hospital laboratories (these are the larger district hospital laboratories that function as regional laboratories).

A. PRODUCT SELECTION, REGISTRATION AND USE

1. National Guidelines for the Use of Rapid HIV Tests

The National Guidelines for the Use of Rapid HIV Tests in Sierra Leone were first established in March 2003 based on models from other countries and WHO recommendations. Following development of the guidelines, an evaluation and validation of the HIV test kits and the testing algorithm to be adopted for Sierra Leone was undertaken by the U.S. Centers for Disease Control and Prevention (CDC). This was to ensure the specificity of the HIV tests selected to detect the strains of the HIV virus affecting the population in Sierra Leone, and the feasibility of their use and compliance with the testing algorithm

under local conditions (e.g. infrastructure, human resource capacity, storage conditions, and distribution systems).

The national HIV testing algorithm for Sierra Leone was updated in August 2006. A serial HIV testing algorithm has been adopted using the Determine HIV-1/2 antibody test as the screening test, the SD Bioline HIV 1/2 3.0 rapid test as the confirmatory test, and the Uni-Gold HIV-1/HIV-2 rapid test as the third, tiebreaker test. See *Annex F. HIV Testing Algorithm, Updated August 2006, Sierra Leone* attached to this report. The same testing algorithm is being followed for HIV testing conducted for VCCT, PMTCT, clinical diagnosis, and for blood safety at district hospitals and PHUs. Blood donors screened with the Determine HIV-1/2 antibody test with a positive test result are referred to VCCT for counseling and confirmatory testing.

Registration of laboratory reagents and supplies to be procured and imported for HIV testing in Sierra Leone is not required. Since HIV test kits are procured from WHO pre-qualified suppliers, in-country inspection, sampling and testing of shipments received is not conducted.

2. Compliance with national HIV testing algorithm

At virtually all the HIV testing sites visited for the assessment, facility staff understood the national testing algorithm and could name the HIV test to be used at each step in the algorithm and identify the correct sequence to be followed for screening, confirmatory and tiebreaker testing. Charts depicting the national testing algorithm were clearly displayed in several facilities. The national HIV testing algorithm was being followed for all purposes of HIV testing including VCCT, PMTCT, clinical diagnosis and blood safety at all of the HIV testing sites visited.

At a couple of NGO-supported sites, after referring HIV positive blood donors to VCCT services for counseling and confirmatory testing, initially positive blood samples from blood donors were re-tested with Uni-Gold for quality control purposes. HIV positive blood donors screened using the Determine rapid assay test at the Blood Bank at Connaught Referral Hospital, are referred to the VCCT services for counseling and confirmatory testing. Confirmatory and tiebreaker testing of HIV positive blood donors is conducted by the laboratory technician in the small HIV testing lab near the VCCT counseling offices at Connaught using SD Bioline and Uni-Gold according to the national algorithm. Unfortunately, due to time constraints, the assessment team was not able to schedule a separate visit to the Blood Bank at Connaught Referral Hospital in Freetown to learn more about how HIV testing is being conducted for the national blood screening services, (a different HIV testing algorithm using ELISA antigen/antibody assays is often used at high-volume testing sites with large numbers of blood donors).

While the Capillus HIV-1/HIV-2 rapid assay tests are not included in the national HIV testing algorithm, small quantities of the Capillus HIV-1/HIV-2 rapid assay tests were found in stock at the Connaught Referral Hospital HIV testing laboratory and at district hospital laboratories assumed to have adequate refrigerated storage space, (Capillus requires refrigeration at 2°–8°C), and were being used for testing of discordant results. The HIV testing lab at Connaught Referral Hospital uses Capillus HIV-1/HIV-2 for re-testing discordant results sent from HIV testing facilities in Freetown, and for testing indeterminate results from tiebreaker tests. Small quantities of Capillus HIV-1/HIV-2 rapid assay tests are also included for procurement in Year 1 and Year 2 of the recently approved Global Fund Round 6 Proposal for Sierra Leone.

Small quantities of Randox HIV test kits that were procured by the MOHS and were in use before the national HIV testing algorithm was updated, are still in stock at facilities and being used for testing blood donors. Some quantities of the Randox test kits are already expired. It is expected that Randox will no longer be procured and that current stocks will be used up or, if expired, disposed of according to established procedures.

3. Need for additional consumable supplies to be included with supply of HIV test kits

One issue that was highlighted by facility staff at the PHU level was the need to include required consumable items in the requisitions and distribution of the test kits. These items include:

- lancets (for blood samples collected by finger prick)
- vacutainers (for blood collected by venipuncture and for transport of samples for quality control testing)
- needles
- syringes
- cotton wool
- gloves
- chlorhexidine

While some consumable items are included in the essential drug kits distributed to districts and PHUs, this supply is to cover all needs at the health facilities and cannot be counted on to ensure that the additional consumable items needed to perform HIV testing are always available.

Another related issue brought up by staff interviewed for the assessment was the need to be able to order additional bottles of the Chase buffer solution used with the Determine HIV-1/2 rapid tests separately from the test kits. The amount of solution in one bottle is insufficient to cover the need for re-testing of blood samples or if more than one drop per test is used or wasted during the testing procedure.

4. National Antiretroviral Treatment Guidelines

The National Antiretroviral Treatment Guidelines for Sierra Leone from August 2006 are comprehensive and include guidelines for clinical management, laboratory monitoring, and nutritional and psycho-social support of HIV infected adults, children and pregnant women. First and second line ARV drug regimens are documented for adults, children, and pregnant women as well as specific ARV drug regimens for HIV/TB co-infected patients, ARV prophylaxis for PMTCT, and for post-exposure prophylaxis.

A conscious effort to limit the number of first and second line ARV drug regimens and the selection of ARV drug products to be managed in Sierra Leone has curbed the proliferation of ARV drug regimens seen in other countries. Regimen proliferation complicates patient monitoring and management, compromises quality of care, and burdens the forecasting, quantification and procurement of ARV drugs for the program. The advantages of limiting the number of ARV drug regimens are that it supports compliance with recommended standard treatment guidelines to ensure the quality of care while maximizing treatment options for patients over the long run, and it streamlines management of the supply chain for ARV drugs.

Nonetheless, a review of the first and second line ARV drug regimens in the National Antiretroviral Treatment Guidelines (pp. 20 -21) is recommended to clarify and update the selection of ARV drugs to be used in the first and second line regimens in light of the 2006 revision of the WHO ART Guidelines and to guide the selection and procurement of ARV drugs for the program. Specifically to reconsider the use of indinavir (IDV) in the first line regimen (which should be boosted with ritonavir), to clarify the use of zidovudine (AZT) and lamivudine (3TC) together in a second line regimen, and to address the

omission of didanosine, tenofovir and abacavir in the national ART guidelines as key drugs for second line regimens, (these drugs are currently being procured by NAS and by the MOHS Procurement Unit).

5. Selection of ARV drugs

The selection and use of single drug formulations and double and triple fixed-dose combination formulations of ARV drugs for the program in Sierra Leone simplifies prescribing and dispensing for providers, enhances patient adherence to treatment, and facilitates management of the ARV drug supply chain . Another important benefit for the program has been the selection and procurement of fixed-dose combination pediatric ARV drugs (Triomune Baby and Triomune Junior) for treatment of children in Sierra Leone. These FDC dispersible tablets address many of the challenges related to the forecasting, procurement, and storage of liquid formulations of pediatric ARV drugs, and greatly facilitate prescribing, dispensing, adherence and ease of use for children and their caregivers.

6. Inclusion of ARV drugs on the NEML, registration, inspection and quality control

Several of the ARV drugs required to comply with the ARV drug regimens recommended in the current National Antiretroviral Treatment Guidelines for Sierra Leone are not on the National Essential Medicines List or not on the list of registered ARV drugs approved for use in Sierra Leone.

The ARV drugs on the National Essential Medicines List last updated in 2004 include six individual antiretroviral medicines in 12 single drug and fixed-dose combination formulations. Sixteen ARV drug products are currently registered in the country including single and double fixed-dose combination drugs for adults and children, but no triple fixed-dose combination drugs are registered. At the time of the assessment, twenty-five different adult and pediatric ARV drug products were found in stock at the facilities visited, (see *Appendix G. List of ARV Drugs and HIV Test Kits)*. Inconsistencies between the ARV drug regimens recommended in the national ART guidelines, the ARV drugs on the NEML, and the ARV drugs registered in the country should be addressed to reflect the current recommended practice and to monitor the ARV drug products being procured and used in the country. The selection of ARV drugs being procured and used in the country should reflect current recommended practice and meet regulatory requirements to ensure the quality of care, facilitate prescribing and dispensing, and support patient adherence to treatment. The supply chain implications for forecasting, quantification, procurement and inventory management of the selected products should also be considered in the selection process.

Because of the rapidly evolving changes in treatment guidelines for ART and the emerging availability of new and improved ARV drug products on the market, a more frequent review and update of the national ART guidelines and the list of ARV drugs on the NEML is recommended, at least every two years, as well as an accelerated process for registration of ARV drugs.

The Pharmacy Board is responsible for inspection, sampling and quality testing of products procured by the government that are received at the Central Medical Stores. Sampling and quality testing of essential drugs, which include ARV drugs, is conducted either at a quality testing laboratory supported by WHO in Sierra Leone, or sent to quality testing labs in Ghana. If the ARV drugs have been procured from pre-qualified suppliers, (whether through international competitive bidding required for government procurement, or through limited international bidding from a list of pre-qualified suppliers as required by the Global Fund), then internal sampling and quality testing is not required.

7. Limited provider knowledge about ARV drugs and management of ARV drug regimens

A need to improve provider knowledge about ARV drug formulations and management of ARV drug regimens was noted during the interviews with facility staff. Providers demonstrated limited knowledge about triple drug therapy, some were unable to name the three drugs that comprise a given regimen, were unfamiliar with the notion of two or three drugs being co-formulated in one tablet, and were unaware that changing individual drugs within a regimen may remove that drug as an option for treatment for that patient in the future. This was discovered during discussions related to the following finding.

8. ARV drug supply driving prescribing and dispensing of first line regimens

Patients currently on the standard first line regimen with the triple fixed-dose combination tablet Triomune 30 (stavudine (d4T)30mg/lamivudine (3TC)150mg/ nevirapine(NVP)200mg) who needed to change from nevirapine to efavirenz due to side effects or toxicity to nevirapine, have been changed to the double fixed-dose combination drug Duovir (zidovudine (AZT) 300mg/ lamivudine(3TC)150mg) plus the single drug efavirenz 600mg. This has resulted in the additional substitution of d4T 30mg with AZT 300mg within the first line regimen.

In some cases providers were unaware that this additional change in regimen had occurred, and in other cases, stockouts of the single drug formulation of d4T30mg (stavudine) and absence of the double fixed-dose combination drug d4T30/3TC in the selection and procurement of ARV drugs for the program led to the use of Duovir (AZT/3TC). This resulted in the additional change of d4T to AZT within the regimen for the patient to be able to continue treatment.

While the number of cases where this occurred at the facilities visited were few, what is important is that the additional substitution of d4T 30mg with AZT 300mg within the regimen may occur, not because it is clinically indicated for the patient, but because of the lack of alternate drug formulations of d4T30mg and 3TC available in the ARV drug supply chain. Each change in a patient's ARV drug regimen has consequences on that patient's options for treatment in the future. This highlights the importance of a well-functioning supply chain for ARV drugs to ensure that the right products in the right quantities are available in the right place, at the right time, in the right condition and at the right cost, i.e. the Six Rights of Logistics, to ensure the quality of care for patients and the success of the ART program.

9. National PMTCT Guidelines

The National Guidelines for the Prevention of Mother-to-Child Transmission of HIV for Sierra Leone were revised in May 2006. These comprehensive guidelines have recently been amended as of April 2007 to reflect expansion of ARV drug prophylaxis for pregnant mothers and infants as follows:

- AZT 300mg from 28 weeks of pregnancy or as soon as possible thereafter,
- Single dose nevirapine 200mg at labor plus AZT and 3TC,
- AZT and 3TC seven days post partum

ARV prophylaxis for infants has been expanded to include

- Single dose Nevirapine for the infant plus AZT for seven days after birth.

These changes in ARV drug prophylaxis for PMTCT were in the process of being implemented through staff trainings being conducted at facilities visited during the assessment.

Mothers who are eligible for ART are then referred to ART sites for ongoing treatment, monitoring and follow up.

B. FORECASTING AND QUANTIFICATION OF COMMODITY REQUIREMENTS

Estimates of the quantities and the cost of the ARV drugs and HIV test kits needed for the program for two years were submitted with the proposal presented by NAS for continued funding under Global Fund Round 6. The proposal had just been approved at the time of this supply chain assessment. These products are to be procured by NAS as the GF Principal Recipient. Additional quantities of ARV drugs and HIV test kits are procured by the Procurement Manager of the Ministry of Health and Sanitation (MOHS) and are based on the amount of the government annual budget allocation for procurement of ARV drugs and HIV test kits ($260,000 for 2007), and on consultation with the Acting Director of NAS to coordinate the quantities to be procured by NAS and the MOHS.

1. ARV drugs

A review of the methodology used for arriving at the estimates of the quantities of ARV drugs needed for adult and pediatric ART, for ARV prophylaxis during pregnancy and post-partum, and for post-exposure prophylaxis revealed that the process involved few people, and as documented, did not clearly describe the sources of data, the basis for the assumptions, or how the actual quantities of product were arrived at. Although the methodology did attempt to capture the percentages of patients expected to be on specific first and second line regimens, the percentages did not add up to 100% in all cases and there were inconsistencies in the second line ARV drug regimens quantified that diverged from the national ART guidelines.

The forecasting methodology should include assumptions about the number of patients expected to continue treatment during the forecast period; the expected rates of drug substitution within regimens and switches from first to second line regimens; and the number of new patients expected to initiate treatment during the forecast period according to scale-up plans and service delivery capacity.

Moreover, the current process for quantification of the ARV drug requirements to be procured does not include additional quantities of ARV drugs needed to cover procurement and supplier lead times and buffer stocks, and does not take into account the inventory levels of products in the country at the time of the quantification. This is required to be able to plan timely procurement and delivery of products to ensure a continuous supply of products while avoiding stockouts and overstocking.

In other words, once the estimated quantity required of each product to meet patient needs during the forecast period has been determined, (the forecasted consumption), an additional set of steps need to be followed as part of the quantification process in order to arrive at the final quantities of each product to be procured.

Currently, these supply chain factors –supplier lead times, minimum stock levels and buffer stocks at CMS - are taken into consideration when determining shipment delivery schedules during the tendering process at NAS, at which time adjustments in the quantities of ARV drugs to be procured cannot be made.

2. HIV test kits

The methodology describing how the quantities of HIV test kits to be procured by NAS were determined was not documented although the quantities are expected to cover the needs for VCCT, PMTCT, clinical diagnosis and blood safety for the next two years under the Global Fund Round 6 grant. There appears to be no established forecasting methodology that captures assumptions or data on the prevalence of HIV amongst VCCT clients, pregnant mothers, patients tested for clinical diagnosis or blood donors that would be needed to calculate the quantity of confirmatory tests needed (SD Bioline), nor the rate of discordance between the screening and confirmatory tests which would indicate the quantity of tiebreaker tests required (Uni-Gold).

The quantities of HIV test kits to be procured by the MOHS Procurement Manager are determined by the amount of the government annual budget allocation for procurement of ARV drugs and HIV test kits ($260,000 in 2007) and through consultation with the Acting Director of NAS to coordinate the quantities procured by both institutions.

Similar to the current process for quantification of ARV drug requirements, the quantification of HIV test kits also does not include additional quantities needed to cover procurement and supplier lead times and buffer stocks, and does not take into account the inventory levels of products in the country at the time of the quantification. This is required to be able to plan timely procurement and delivery of products to avoid stockouts and overstocking and to ensure continuous availability of products for testing.

In the same way as for ARV drugs, once the estimated quantity required of each product to meet client needs for testing during the forecast period has been determined, (the forecasted consumption), an additional set of steps need to be followed as part of the quantification process in order to arrive at the final quantities of each product to be procured.

Currently, these supply chain factors –supplier lead times, minimum stock levels and buffer stocks at CMS - are taken into consideration when determining shipment delivery schedules during the tendering process at NAS, at which time adjustments in the quantities of HIV test kits to be procured cannot be made.

3. HIV test kits and ARV drugs for PMTCT

The PMTCT program has a documented forecasting methodology for estimating the quantities of HIV test kits required for each year from 2006 – 2010 based on:

- the targeted number of pregnant women to be screened using Determine plus an additional 10% for partners to be tested and a 5% wastage rate,
- the expected number of HIV positive pregnant women and partners that would require confirmatory testing with SD Bioline plus a 5% wastage rate,
- a 5% rate of discordance between the screening and confirmatory tests for pregnant women and a 1% rate of discordance for partners from which the quantities of Uni-Gold for tiebreaker testing are calculated,
- the targeted percentage and number of exposed children that will require HIV testing using Determine plus a 5% wastage rate,
- the expected number of HIV positive exposed children that would require a confirmatory test using SD Bioline plus a 5 % wastage rate,

- a 1% discordance rate between the screening test and the confirmatory test for exposed children that would require a tiebreaker test using the Uni-Gold.

Similarly, a documented methodology exists for estimating the percentage and number of pregnant women and infants that will receive ARV prophylaxis for each year. Given the recent amendment to the guidelines for ARV prophylaxis, the quantities of AZT and 3TC (tablets for mothers and oral solutions for infants) will need to be re-calculated.

While the forecasting assumptions for quantification of HIV test kits and ARV drugs for PMTCT are well documented, further steps are required to complete the quantification to include additional quantities needed to cover procurement and supplier lead times, buffer stocks, and to take into account existing inventory levels in the country at the time of the quantification. This is required to guide timely procurement and delivery of products to avoid stockouts and overstocking and to ensure the continuous availability of products for HIV testing and ARV prophylaxis.

C. FINANCING AND PROCUREMENT OF COMMODITIES

A brief description of the various sources of funding and procurement mechanisms for ARV drugs and HIV test kits for the national HIV/AIDS program in Sierra Leone is provided below.

1. World Bank Multi-sectoral AIDS Project (WB/MAP)

Originally a four year World Bank initiative to support the Government of Sierra Leone's response to the HIV/AIDS epidemic through the Sierra Leone HIV/AIDS Response Project (SHARP) from 2002-2006, the project has been extended an additional year and will end in December 2007 although WB/MAP funding for procurement of HIV/AIDS commodities ended in 2006.

In 2005, the WB/MAP project provided US$80,000 towards an initial procurement of ARV drugs. Since then, NAS has conducted procurement of ARV drugs, OI drugs, STI drugs, consumable supplies and HIV test kits with WB/MAP funding from the Health Sector Response account at the MOHS Procurement Unit. The final WB/MAP funded procurement ($300,000) of ARV drugs, OI drugs, STI drugs and consumable supplies arrived in one consignment in March 2007. An additional US$213,000 of WB/MAP funds have also been used for procurement of HIV test kits.

ARV drugs and HIV test kits procured with WB/MAP funds are shipped by air to Sierra Leone, inspected at the airport, and then transferred to the NAS warehouse for HIV/AIDS commodities in Laka.

2. The Global Fund

Funding

The total funding under Global Fund Round 4 was US$17.5 million. Sierra Leone received US $8 million in 2004 for two years under Phase 2 of the Global Fund Round 4 proposal to scale up HIV/AIDS activities initiated under the World Bank/MAP project. This included funding for procurement of HIV/AIDS commodities.

There are no set funding limits for procurement of HIV/AIDS commodities under the Global Fund grant. NAS prepares a forecast of the ARV drug and HIV test kit needs to be procured for each year of the

two years of the Global Fund grant. The last procurement of ARV drugs with GF Round 4 Phase 2 funds was for US$560,000 and US$120,000 for HIV test kits.

The Global Fund Round 6 HIV/AIDS proposal for Sierra Leone for 2007-2011 was recently approved for US$26.8 million The HIV/AIDS related commodities to be procured in Year 1 and Year 2 of Round 6 include:

- ARV drugs, OI drugs, and STI drugs;
- diagnostic HIV test kits;
- other diagnostic products, supplies and equipment;
- sharps disposal (safety) boxes and protective gears;
- consumable medical supplies;
- condoms;
- home based care kits;
- malaria bed nets (LLINs);
- other health equipment such as delivery kits, caesarian section kits; condom testing machine; PCR machine; and CD4 cell counters.

Product	Year 1 Total Estimated Cost (US$)	Year 2 Total Estimated Cost (US$)	Year 1 & 2 Total Estimated Cost (US$)
ARV drugs	$716,753	$770,509	$1,487,262
Drugs for OIs and STIs	$201,979	$231,321	$433,300
Diagnostic HIV test kits	$164,651	$164,651	$329,302
All other HIV/AIDS related commodities	$839,800	$296,125	$1,135,925
TOTAL *	$1,923,183	$1,462,606	$3,385,789

Total estimated cost of HIV/AIDS related commodities for Year 1 and Year 2 under Global Fund Round 6 proposal.
*Does not include non-health products and services.

Procurement

NAS as the Global Fund Principal Recipient receives funds directly from the Global Fund and outsources procurement of all HIV/AIDS commodities to a KPMG procurement specialist based at NAS. The KPMG procurement specialist at NAS manages procurement of HIV/AIDS commodities from two funding sources, the Global Fund and the World Bank/MAP project as described above. Limited International Bidding (LIB) is required by the Global Fund. NAS is provided with a short list of WHO pre-qualified local and international suppliers who are all invited to submit bids. All products must be air shipped and suppliers must be able to guarantee 2/3 of shelf life remaining on receipt in country as required by the GOSL.

ARV drugs are procured annually through one tender with a staggered shipment delivery schedule. The last bid for ARV drugs procured with GF Round 4 Phase 2 funding was won by Cipla. The order for the annual procurement was submitted by NAS in February, the contract was signed in March, and shipments are scheduled to arrive in June, September and December of 2007. The estimated lead time

for procurement of ARV drugs through the Global Fund account is 5 months and through the WB/MAP account is 6 months.

HIV test kits procured with GF and WB/MAP funds is a sole source procurement through WHO. NAS requests a quotation for the quantities of HIV test kits to be procured from WHO, WHO sends the quotation, an invoice is prepared, and payment is made by NAS. This procurement has a 3 month lead time. All HIV test kits procured with GF and WB/MAP funds are air shipped directly from WHO and require a minimum 2/3 shelf life remaining on receipt in country. There is no fixed, annual quantification and procurement schedule for HIV test kits for the program. NAS may respond to spontaneous requests for HIV test kits from outside the established distribution system (e.g. the mines). NAS issues HIV test kits from existing stocks at the Laka warehouse, and initiates procurement of another shipment when needed to replenish the stocks.

All products procured through NAS with GF and WB/MAP funds are shipped by air to Sierra Leone, inspected at the airport, and then transferred to the NAS warehouse for HIV/AIDS commodities in Laka.

All shipping, handling and inspection costs for HIV/AIDS commodities procured through NAS are covered by NAS.

3. Government of Sierra Leone (GOSL)

There is a government budget line item for procurement of ARV drugs and HIV test kits. The annual budget allocation for procurement of ARV drugs and HIV test kits has increased from $200,000 in 2005 to US $260,000 in 2007. The MOHS Procurement Manager conducts an annual procurement of ARV drugs and HIV test kits through International Competitive Bidding (ICB) required by the government to be delivered in one shipment per year.

The International Competitive Bidding (ICB) process, which has a longer lead time than Limited International Bidding (LCB), plus the government lead time for advance payment, and the supplier lead times for shipment by boat create a total lead time of approximately 9 to 12 months until the shipment is received in country. ARV drugs and HIV test kits are received and stored briefly at CMS for verification and quality inspection and then transferred to the NAS warehouse for HIV/AIDS commodities in Laka. ARV drugs procured with government funds from pre-qualified suppliers do not require internal sampling and quality testing.

4. UNICEF

While UNICEF primarily provides technical support, due to the large scale-up of PMTCT services in 2006 and the need for additional HIV test kits, UNICEF provided a one time procurement of a small quantity of test kits (US$110,000) along with quantities of co-trimoxazole for prophylaxis for HIV positive mothers (US $40,000). A one time donation of pediatric oral solutions that had not been planned by the program was procured by UNICEF in 2005, arrived in 2006, and was kept at UNICEF until transferred to the NAS warehouse in Laka in 2007. UNICEF in Sierra Leone uses the UNICEF procurement services located in Copenhagen. There is a 3 month lead time for delivery of HIV test kits which, after receipt and inspection at the airport, are transferred to the NAS warehouse in Laka.

In 2007, UNICEF plans to provide funding for procurement of 50% of the HIV test kit needs for PMTCT with the other 50% to be provided through NAS. UNICEF will also procure ARVs for ARV prophylaxis for mothers and infants according to the new guidelines, and co-trimoxazole for prophylaxis for

mothers and infants. At the time of the assessment, UNICEF was in the process of finalizing the forecasts for these commodities.

In addition, UNICEF is planning to expand pediatric care to include ART and will support development of guidelines and clinical training for pediatric ART in 2007. While oral solutions and dispersible tablet formulations of pediatric ARV drugs have already been procured by NAS for 2007, UNICEF could procure additional quantities of pediatric ARVs if needed through the UNICEF procurement services in Copenhagen.

5. MSF Holland

MSF Holland has been providing support to the district government hospitals in Magburaka and Kambia which included procurement of adult and pediatric ARV drugs, and Determine and Uni-Gold test kits for screening and confirmatory testing of blood donors at a separate MSF supported laboratory within the hospital. Procurement and distribution of these commodities, which have been provided through a parallel MSF procurement and distribution system, has not been coordinated with NAS. Significant quantities of expired adult and pediatric ARV drugs were found at one facility. MSF Holland support to Sierra Leone will end in August 2007.

6. International Red Cross (IRC)

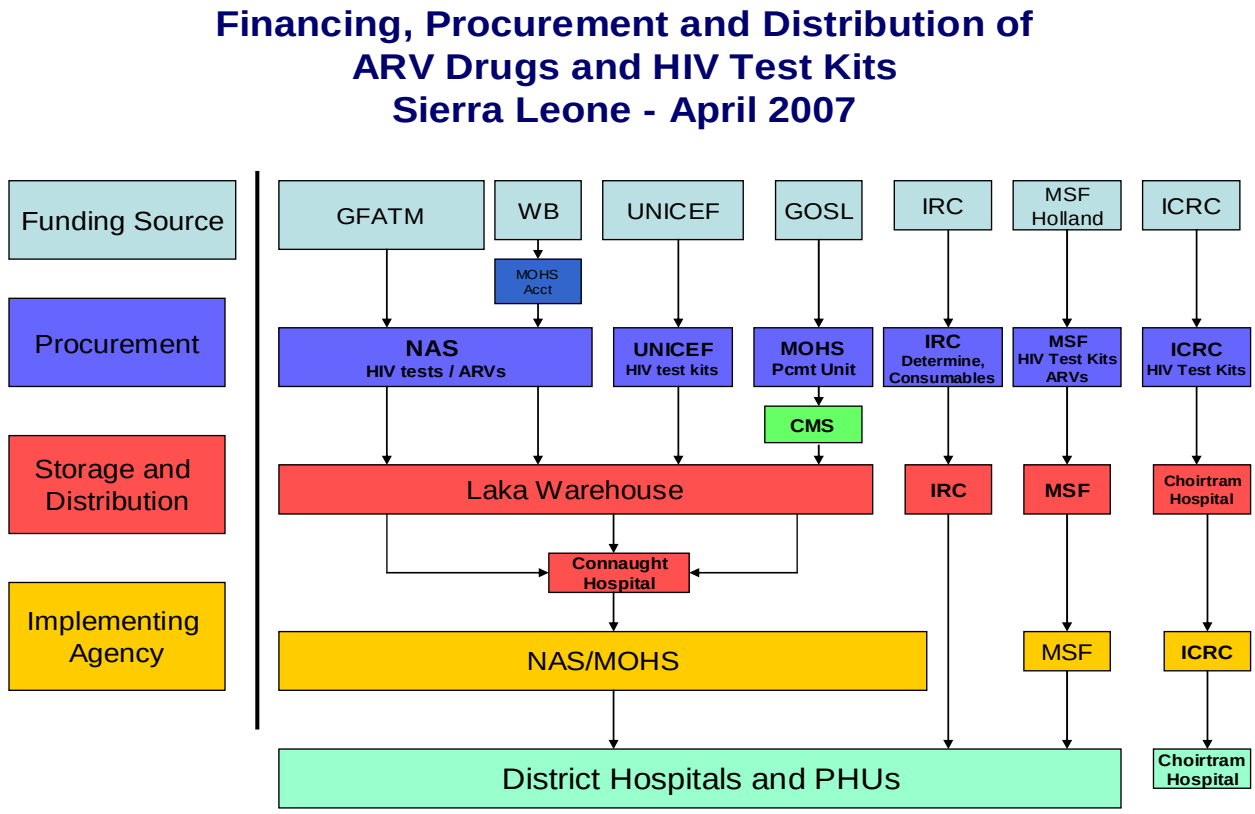
IRC has been supporting establishment of a blood bank at the district government hospital in Kenema and has been providing Determine test kits and consumables for blood screening through a separate procurement and distribution system.

7. International Committee of the Red Cross (ICRC)

ICRC has been procuring HIV test kits according to the national HIV testing algorithm for Choirtram Hospital, a mission hospital in Freetown. At the time of the assessment, it was unclear whether ICRC might also be providing HIV test kits for other mission hospitals.

The following diagram represents the current sources of financing, procurement agents, and distribution systems for ARV drugs and HIV test kits in Sierra Leone.

Figure 1. Financing, Procurement and Distribution of ARV Drugs and HIV Test Kits Sierra Leone – April 2007



While funding from the WB/MAP project and MSF Holland will end in 2007, this diagram still illustrates the need for coordination of the various funding inputs, the different procurement mechanisms and shipment delivery schedules, and the in-country distribution of ARV drugs and HIV test kits to be able to ensure a continuous and coordinated supply of products into the country.

Information sharing and coordination between NAS as the Global Fund Principal Recipient, the MOHS Procurement Unit, and UNICEF is already ongoing. NAS's role in this coordination should be strengthened and should be extended to include all existing and any new sources of funding for procurement and supply of ARVs and HIV test kits for the national program. All key stakeholders should be involved in the quantification of commodity requirements for the program to identify the funding needs, address any funding gaps, and to coordinate the quantities of products that will be procured by each funding source and the timing of shipments. Ongoing coordination of these key supply chain functions for the national program will be critical for successful scale-up of the national response to the HIV/AIDS epidemic.

D. LOGISTICS MANAGEMENT INFORMATION SYSTEM

Separate information systems have been established for collection and reporting of data on the ART, VCCT, PMTCT and Blood Safety programs and are managed by the Monitoring and Evaluation Unit (M&E Unit) at NAS in coordination with the national VCCT/ART Coordinator, the national PMTCT Coordinator and the Blood Safety program.

1. Current reporting system on HIV testing for VCCT, PMTCT, HIV Diagnostic Testing and Blood Safety

Demographic data (age, gender, marital status, residence, occupation) and service statistics data (number of clients counseled and tested, the number of positive test results, identification of HIV-1 and HIV-2 strains) is collected and reported monthly on the HIV testing services provided for VCCT, PMTCT, and clinical diagnosis. The PMTCT monthly reporting form contains additional data on the number of spouses or partners tested, the type of HIV test kit used, and the number of mothers and infants that received ARV prophylaxis. The reporting form for the National Safe Blood Services includes data on the number and gender of blood donors screened for HIV, Hepatitis B, Hepatitis C and Syphilis, the number of positive test results for each, and the number of units of blood transfused for adults and children. While this type of demographic and service statistics data collected and reported through a health management information system (HMIS) is important for monitoring program performance and for program planning and management purposes, it is not logistics data and cannot be used for monitoring and managing the consumption and stock levels of HIV test kits for the program, nor to correctly calculate re-supply orders for facilities.

2. Current reporting system on ART

The monthly summary report for ART has recently been updated to include additional data on the WHO clinical stage of disease, the number of continuing and new ART patients, the drugs administered, whether the patient has treatment support from a relative, and whether the patient changed or stopped treatment and the reason. This data is collected on the number of patients that visited the site to collect their ARV drugs each month, but data on the total number of patients receiving ART at each site is not reported. This data is important to collect since the re-supply of ARV drugs to each site should include sufficient quantities of ARV drugs for all patients on treatment at the site whether they actually received their drugs during the month reported or not. While this type of demographic and service statistics data collected and reported through a health management information system (HMIS) is important for monitoring program performance and for program planning and management purposes, it is not logistics data and cannot be used for monitoring and managing the consumption and stock levels of ARV drugs for the program, nor to correctly calculate re-supply orders for facilities.

At most of the sites visited during the assessment, daily register books and monthly summary report forms provided by NAS and the PMTCT program to collect and report this HMIS data were available and being used. Data reported on the monthly summary report forms, commonly known as "returns", is used to prepare the requisitions for re-supply of ARV drugs and HIV test kits at the M&E Unit at NAS. A procedure has been established such that re-supply of these products is dependent on submission of individual returns from each facility providing ART and HIV testing services at all levels of the health system. While this enhances the incentive for the sites to report, reporting rates at the national level are reportedly low and inconsistent.

3. Lack of logistics management information system (LMIS) for collecting and reporting essential logistics data on consumption, losses and adjustments, and stock on hand

No standardized logistics management information system (LMIS) exists for collection and reporting of essential logistics data on consumption, losses and adjustments, and stock balances of ARV drugs and HIV tests at each facility. A separate logistics management information system (LMIS) for routine collection and reporting of logistics data is needed to be able to effectively monitor consumption and stock on hand at each facility and for the program, and for facilities to be able to correctly calculate their order quantities. An LMIS is also critical to be able to analyze and use logistics data to improve commodity forecasting and quantification and to inform procurement decisions at the national level.

Consumption

Consumption, the actual quantities of ARV drugs dispensed or HIV tests used, should be recorded in a Daily Register at the point of service delivery i.e. at the point where dispensing of the ARV drugs or use of HIV test occurs whether by an adherence counselor, laboratory technician, pharmacy technician, PMTCT nurse, VCCT counselor or other staff.

While the "drugs administered" is recorded on the ART Monthly Summary Report, this is not the actual quantity of each ARV drug dispensed to the patient at the visit but rather, the regimen being supplied. It was observed that even so, the data recorded in this column often did not reflect a complete regimen, e.g. AZT/3TC might be recorded but the third drug was not recorded.

In the case of the PMTCT and VCCT Monthly Summary Report forms, while the number of clients being tested and the test results is recorded, and in the case of the PMTCT Monthly Summary Report, the type of HIV test used is recorded, the actual consumption of each type of HIV test used is not recorded and reported.

In order to effectively and efficiently manage the logistics system for the supply of ARV drugs and HIV test kits, monthly consumption data must be aggregated and reported on a standardized LMIS form.

Losses/Adjustments and Stock on Hand

While stock cards were in use at some of the facilities visited, not all products had a stock card, some had not been updated in one or two years, and the data on stock on hand often did not match the physical count at the time of the visit. Losses and adjustments to inventory were not recorded separately, if at all. No stock on hand data from facilities is reported or used for calculating the quantities of ARV drugs or HIV test kits to be re-supplied when completing the requisition forms at the M&E Unit.

In order to effectively and efficiently manage the logistics system for the supply of ARV drugs and HIV test kits, the quantity of losses and adjustments, and the quantity of stock on hand for each product at the end of the month must be reported on a standardized LMIS form.

A recent effort by the M&E Unit to distribute standardized MOHS Inventory Control Cards to all facilities should be supported by training in basic stockkeeping practices and instructions on how to correctly record data on the stock card for each product. One stock card should be used for each different expiration date of products in storage, and products should be arranged by expiration date in the warehouse or storeroom to facilitate issuing or use according to First-to-Expire, First Out (FEFO). The stock card should be kept physically close to the product to facilitate recording and updating stock data when issuing or dispensing. Movement of products in or out of storage that are not receipts or

issues through the established distribution system e.g. product losses due to expiry, damage or theft, or transfers to or from other facilities or organizations that are not part of routine distribution should be recorded as losses or adjustments to inventory.

4. Need to collect data on total number of patients on ART, by regimen

There are unique challenges in logistics management of ARV drugs due to the nature of ART itself that must be incorporated into the LMIS data collection and reporting system. ART is based on the prescribing and use of triple drug regimens of different combinations of ARV drugs that need to be available in the right quantities and at the same time to be able to respond to patients' changing needs for treatment. The supply of ARV drugs at a facility should be able to respond to the need for single drug substitutions within regimens and complete regimen changes as patients switch from first line to second line regimens. Use of historical consumption data is insufficient to ensure that the ARV drug supply will respond to changes in prescribed ARV drug regimens of continuing patients over time, nor reflects the quantities of ARV drugs that will be required to treat new patients. This is particularly true when national ART guidelines are updated and new patients may be initiated on different ARV drug regimens than were being prescribed earlier in the program. Availability of data on the number of patients on ART by regimen becomes more critical as ART programs scale up to reach and treat more people living with HIV and as continuing patients on treatment require changes in their ARV drug regimens to address side effects, toxicities, drug resistance and treatment failure over time.

Therefore, data on the total number of patients on ART at the end of the month (including continuing patients and new patients that initiated treatment during the month) and the regimens they are on should be collected and reported at each ART site. In addition, the number of new patients expected to initiate ART in the following month and the ARV drug regimens they are expected to be put on should be collected to be able to accurately calculate the re-supply quantities of ARV drugs for the facility.

At the national level, data on the total number of patients on treatment in the program and the ARV drug regimens they are on should be used to inform forecasting assumptions about the number of new patients that will initiate treatment and which ARV drug regimens they will be on during the forecast period for which ARV drugs are to be procured.

E. INVENTORY MANAGEMENT

A key finding of the supply chain assessment was the lack of a standardized inventory control system with procedures for monitoring and managing stock levels of ARV drugs and HIV test kits at all levels of the logistics system. Appropriate stock levels for ARV drugs and HIV test kits have not been established for the central warehouse in Laka, for hospitals in the Western Area, nor for district hospitals and PHUs. As a result, NAS is currently unable to detect and address stock imbalances in a timely fashion to avoid stockouts and overstocking throughout the in-country supply pipeline. Stockouts of efavirenz, single stavudine d4T30mg and second line drugs were noted at several of the facilities visited, as were quantities of expired ARV drugs and HIV test kits.

In addition, a standardized procedure for correctly calculating order quantities based on logistics data from facilities does not exist. The order quantities should be based on each facility's consumption, stock on hand, and pre-determined stock levels that have been established to be able to maintain a continuous supply of ARV drugs and HIV test kits at the facility.

A maximum/minimum inventory control system is recommended for ARV drugs and HIV test kits. Maximum and minimum stock levels based on order intervals, lead times, and buffer stock should be established for each level of the in-country supply pipeline – at the central warehouse in Laka, for the

hospitals in the Western Area that receive their supplies directly from Laka, and for all district level and PHU level facilities.

F. FACILITY ORDERING PROCEDURES

While there is an established procedure for submission of monthly summary reports on ART, VCCT, PMTCT, HIV Diagnostic Testing and Blood Safety to the M&E Unit at NAS which are then used for determining the order quantities for each facility, logistics data is not reported and is not used in calculating the order quantities. This does not ensure that the correct quantities of ARV drugs and HIV test kits are being supplied to facilities.

Staff at PHUs interviewed during the assessment reported "ordering when we run out", traveling to the district hospital to collect supplies when needed, waiting for a visit from district staff to bring supplies, or borrowing from nearby NGOs or mission hospitals when needed. This was evidence that the current procedures for ordering ARV drugs and HIV test kits are not being uniformly followed, or are not effective in ensuring a continuous supply at all ART and HIV testing sites.

There are however, several elements in the current system and procedures for ordering ARV drugs and HIV test kits for facilities that, while not followed equally at all districts and PHUs visited for the assessment, should be maintained and incorporated into any re-design of the logistics system and implementation of an LMIS for ARV drugs and HIV test kits.

- Re-supply of ARV drugs and HIV test kits to facilities is dependent on submission of a monthly summary report from each facility. Facilities that do not report, will not receive new supplies,
- Order quantities are determined for each facility individually based on the information reported,
- Each district hospital completes and submits its own monthly summary reports as a separate facility,
- There is an established order interval for ARV drugs and HIV test kits, currently quarterly for ARV drugs and monthly for HIV test kits. These order intervals may need to be changed as part of a re-design of the logistics system to accommodate the increase in the quantities of products needed to respond to scale up of ART and HIV testing services,
- Monthly meetings to review and discuss monthly summary reports from PHUs with District HIV/AIDS Counselors. Includes discussion of quantities of ARV drugs and HIV test kits needed for each facility. This is a practice that would be critical for ensuring the quality and timeliness of the logistics data needed to ensure a continuous supply of ARV drugs and HIV test kits to PHUs and should be continued and encouraged,
- Joint review of all the monthly summary reports between the District HIV/AIDS Counselor and staff of the M&E Unit at NAS to finalize order quantities and prepare the requisition form for each facility. While the process of joint review and discussion of the information provided in the monthly summary reports should be continued and encouraged, order quantities may no longer need to be calculated at the central level depending on the re-design of the logistics system.

As already discussed in detail above in section *D. Logistics Management Information System,* the data currently being collected and reported on the ART, VCCT, PMTCT, and HIV Diagnostic Testing Monthly Summary Reports is not logistics data and cannot be used to accurately calculate order quantities for re-supply to facilities. A separate logistics management information system (LMIS) for routine collection and reporting of logistics data from facilities will need to be implemented.

G. DISTRIBUTION AND TRANSPORT

District HIV/AIDS Counselors come to Freetown to bring the monthly summary reports and meet with staff at the NAS M&E Unit. After reviewing the monthly summary reports together and determining the order quantities for ARV drugs and HIV test kits for each facility, a requisition is prepared and signed at NAS and sent to Laka warehouse. The orders for each facility are then packed at the Laka warehouse and transferred to Connaught Referral Hospital in Freetown where they are collected by the District HIV/AIDS Counselors to be brought back to the districts. This whole process usually takes a couple of days in Freetown before the District HIV/AIDS Counselors are on their way back to the districts.

This distribution system was arranged to limit the travel time required for District HIV/AIDS Counselors to collect the commodities from Laka warehouse which is located 45 minutes outside of Freetown, and to take advantage of the time in Freetown to carry out other activities before returning to the districts.

District hospitals do not hold stocks of ARV drugs and HIV test kits for re-supply to PHUs. Each district hospital receives its own pre-packed order from Laka warehouse along with the orders for each PHU, and serves only as a temporary storage and distribution point until the orders are collected from or delivered to the PHUs. Therefore, there is no "district level" in the supply pipeline, but rather, orders are distributed from the central level at Laka warehouse, to Connaught Referral Hospital, and then to district hospitals before being collected or delivered to PHUs.

"Distribution from districts to PHUs is a major constraint" was a comment heard often from people at all levels of the logistics system during the assessment. There is one vehicle per district for all transportation needs; there are delays in collection/distribution of commodities when availability of the vehicle is dependent on other activities; some districts have trucks funded by the World Bank, while others do not; there is a need for refrigerated transport and cold storage for commodities that require cold chain; there is no budget line item for transportation costs from districts to PHUs; allocations of fuel for PHUs are insufficient. These are some of the challenges cited when interviewing facility staff about the distribution of ARV drugs and HIV test kits.

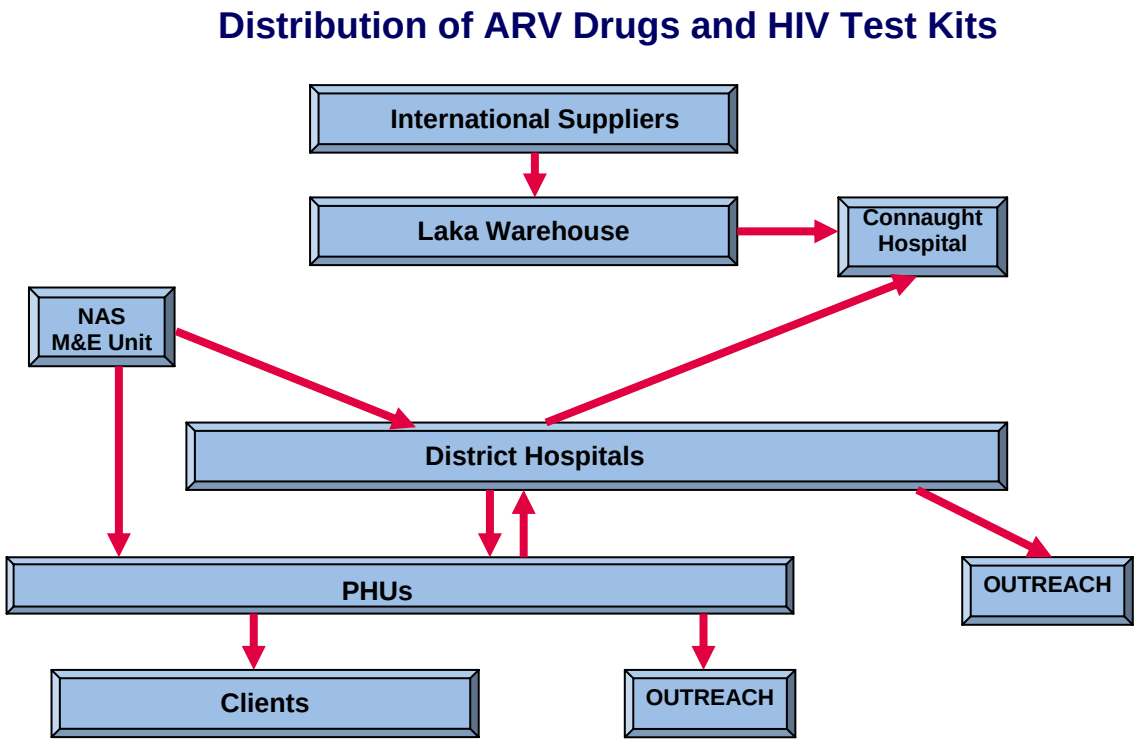
Multiple modes of transportation are used to transport ARV drugs and HIV test kits, e.g. the district vehicle that collects supplies from Freetown may also distribute to PHUs; supplies may be delivered during a supervisory visit from the NAS M&E Unit or the District HIV/AIDS Counselor; staff may use public transport which they pay out-of-pocket; or supplies may be collected or delivered by motorbike, ambulance, NGO or mission vehicles. There is no one, single designated and reliable form of transport for distribution of ARV drugs and HIV test kits to facilities at the PHU level.

Despite all these challenges, the time from collection of ARV drugs and HIV test kits from Freetown by District HIV/AIDS Counselors, to distribution to PHUs was estimated at no more than one week for the districts visited for the assessment.

An additional US$60,000 under the Global Fund Round 6 grant was recently awarded to purchase a refrigerated vehicle for transport of HIV/AIDS commodities that require cold chain. An assessment of the transport capacity of the vehicle to determine the volume of commodities that can be carried and to plan a schedule of delivery routes to support distribution to districts is recommended to maximize use of the vehicle. Combining collection of HIV/AIDS commodities from Freetown by districts with available transport, with delivery to other districts with transport constraints could be considered as an option to address some of the distribution challenges as the program expands and the volume of commodities to be distributed increases. In addition, a budget line item should be assigned to cover maintenance and repair costs of the refrigerated vehicle.

Figure 2. below illustrates the system for collection and/or distribution of ARV drugs and HIV test kits at the time of the assessment.

Figure 2. Distribution of ARV Drugs and HIV Test Kits, Sierra Leone – April 2007



H. STORAGE CONDITIONS AND STOCKKEEPING PRACTICES

1. Storage Conditions

Laka Warehouse

Due to problems with pilferage at the Central Medical Stores, all ARV drugs and HIV test kits procured by NAS are stored at a refurbished building in Laka, a 45 minute drive from Freetown.

Storage conditions observed at the Laka warehouse are generally good as noted below:

- Sound infrastructure with enclosed space, concrete walls and floors, roof in good condition,
- Clean, well-maintained, no signs of rodents or insects,
- Security staff on site, access to warehouse limited to authorized personnel,
- Personnel available for access to commodities when needed,
- Storage space is only used for drugs and medical supplies,
- Products are stored off the floor on pallets and shelving,
- Inventory control cards available and in use for each product in storage, although not by expiration date,
- Lighting is adequate, although may depend on availability of electricity at night.

The following issues regarding storage of ARV drugs and HIV test kits at the Laka warehouse will need to be addressed:

- Cases of expired products stored together with usable products are taking up limited storage space available in the warehouse,
- While an air-conditioned room is available for storage of ARV drugs and HIV test kits that require refrigeration, the temperature is not routinely monitored and could not be verified at the time of the visit,
- Storage space is inadequate for the current volume of commodities and will clearly not be able to accommodate program expansion.

An additional US$150,000 under the Global Fund Round 6 grant was recently awarded to build additional storage space and refurbish existing structures to provide cold storage for ARV drugs and HIV test kits that require refrigeration.

Since the building structure at Laka was not originally designed as a warehouse, product handling at the Laka warehouse is hampered by the lack of loading/unloading and staging areas for receiving and issuing, narrow stairs down to the main stores room on the lower level, and low ceilings in the main store room. These factors, amongst many others, should be taken into consideration in the construction of new warehouse space and in the selection and refurbishment of existing structures in the future. (see "Guidelines for Warehousing Health Commodities" in the *References* section of this report).

National Reference Lab

The National Reference Laboratory is also located within the recently refurbished building in Laka that serves as the NAS warehouse for ARV drugs and HIV test kits. Two laboratory rooms have been built where all quality control testing of HIV tested blood will be performed, as well as more sophisticated

HIV laboratory diagnostic testing and monitoring in the near future. At the time of the visit, the laboratory rooms were clean and well-maintained with empty cabinet and counter space pending delivery of new laboratory equipment and supplies.

ELISA assay test kits for HIV were stored in a solar powered refrigerator which had no thermometer and a blank temperature chart for monitoring the required temperature range. In order to store all the ELISA assay test kits that require refrigeration at 2°- 8° C at the NRL, the kit contents had been removed from their outer boxes and inner packaging, and emptied loosely into the solar refrigerator to take up less space. This made it difficult to identify and locate the different types and quantities of ELISA assay tests in stock because test kit trays, reagent bottles, and consumable supplies were mixed up together inside the refrigerator.

Further investigation revealed substantial quantities of expired ELISA test kit trays and bottles of reagents taking up space in the refrigerator together with usable test kits and supplies.

Corrective actions were taken immediately the same day at the NRL to separate expired products from usable products to be removed from storage and disposed of according to established procedures, and to re-organize the refrigerated stocks to be able to easily identify and locate the different brands and types of ELISA test kits.

Connaught Referral Hospital

The storeroom for ARV drugs, OI drugs and other HIV-related commodities at Connaught Referral Hospital is a walled off area within an existing office space with one small window and a locked door. The storage space is extremely small, crowded and disorganized. The storeroom at Connaught Referral Hospital also serves as a satellite storage and collection point for District HIV/AIDS Counselors to collect their ARV drug orders that are transferred from the Laka warehouse so that they can collect them when they are in Freetown. The storage constraints at Connaught Referral Hospital require repeated transfers of stocks from the Laka warehouse when the District HIV/AIDS Counselors are in town. The storage space at Connaught Referral Hospital is already inadequate for the current volume of HIV/AIDS related commodities that need to be managed, and will not be able to accommodate program expansion.

Second line ARV drugs that require cold storage are stored in a refrigerator in the counseling room which the assessment team did not have access to at the time of the visit.

Capillus HIV-1/HIV-2 test kits, which require refrigerated storage at 2° - 8°C, are stored in a small refrigerator in the HIV testing laboratory near the counseling rooms at the VCCT/ART and PMTCT program offices. There was no temperature monitoring chart and the refrigerator temperature could not be verified at the time of the visit. There are frequent and prolonged interruptions in power supply to the hospital - there was no electricity during the four hours of the assessment visit - which indicate that adequate cold storage may not be able to be maintained for products that require it.

District Hospitals and PHUs

Most district hospitals and PHUs visited had assigned storage areas for ARV drugs and HIV test kits and were meeting storage needs in different ways:

- Storage and issuing of ARV drugs integrated within existing hospital pharmacy stores or laboratory stores at district hospitals,
- Separate storerooms specifically assigned for storage of HIV/AIDS commodities,

- ARV drugs stored on shelves in locked cabinets or in a box on the floor in counselors' offices,
- HIV test kits stored on shelves in locked cabinets or in a refrigerator in counselors' offices.

Storage areas were generally integrated into already existing pharmacy stores or laboratory stores, counseling offices, or locked cabinets within an existing building structure and were therefore well-lit and ventilated. Storage space at most of the district hospitals and PHUs visited was adequate for the current volume of commodities being managed and could accommodate program expansion. At a few of the sites visited, more space could be made available for storage of commodities if expired products, empty boxes, files, and other non-medical supplies were removed from the storeroom, and if products were re-organized in a more orderly fashion in the storeroom.

2. Stockkeeping Practices

There is an immediate need to implement basic stockkeeping practices for ARV drugs and HIV test kits in all facilities including the Laka warehouse.

The findings at the time of the assessment included:

- Stock cards for ARV drugs and HIV test kits were available and updated at Laka warehouse although recorded stock balances did not match the physical count for several products on the day of the visit,
- There were no stock cards for HIV test kits at the National Reference Laboratory, nor at Connaught Referral Hospital,
- Connaught Referral Hospital and four of the six district hospitals visited had stock cards for ARV drugs which, if available, were not being routinely updated to reflect movement of products, (quantity received, quantity issued or dispensed, losses/adjustments) and current stock balances (quantity on hand) at the facility,
- The MOHS Inventory Control Card used at Laka warehouse and being distributed to districts does not include a space for recording the expiration date of the products in stock, nor is one stock card being used for each different expiration date of each product which is needed to facilitate the movement and use of products according to FEFO (First-to-Expire, First Out),
- No stock cards were available for ARV drugs or HIV test kits at any of the PHUs visited.
- Products are not arranged in storerooms or on shelves in a way that makes it easy to read product labels and expiry dates to facilitate identification and access to products when needed,
- Visual inspection and a physical count of products when being received is not routinely performed nor documented on stock cards (except for Laka warehouse). This is important to be able to detect any damage to the external product packaging or to the products themselves; to verify that the quantities being received are the same as the quantities shipped; and to ensure that the quantities of products being received can be used before expiry. Visual inspection and physical count of the products in stock should also be conducted on a routine basis.

Without the routine and correct use of stock cards for recording movement and quantities of stock on hand at each ART and HIV testing site in the country, and without a standardized LMIS for collecting and reporting this data to the central level, the actual quantity and quality of ARV drugs and HIV test kits in stock in the country cannot be determined, and NAS will not be able to effectively monitor or manage the supply of ARV drugs and HIV test kits for the program.

IV. RECOMMENDATIONS

A. SHORT-TERM RECOMMENDATIONS

1. Stockkeeping Practices

The most immediate of the recommendations for improving logistics management of ARV drugs and HIV test kits for the national program is to standardize and implement basic stockkeeping practices at all facilities that receive, store and use ARV drugs, HIV test kits, and other HIV/AIDS commodities. While the following recommendations are not exhaustive, they are critical for ensuring the quality of the products being distributed, stored and used to support scale up of the national response to HIV/AIDS, and for NAS to be able to effectively monitor and manage the quantities of stock on hand throughout the in-country supply pipeline. Several of the following recommendations were already being implemented at Laka warehouse and the National Reference Laboratory while the USAID | DELIVER advisors were still in the country.

- Label and separate all expired and damaged products from usable products in storage,
- Remove and dispose of all expired and damaged products according to established procedures,
- "De-junk" all storage areas; remove all non-medical items from pharmacy stores and laboratory stores (e.g. empty boxes, suitcases, files, chemicals). Where ARV drugs and HIV test kits are kept in a Counselor's office, ensure that these products are stored separately from other non-medical items in a locked drawer, cabinet or refrigerator,
- Update the current MOHS Inventory Control Card to include:
    - a space for recording product expiration date,
    - a column for noting Remarks after each transaction before the Initials column,
- Standardize the use of stock cards for ARV drugs and HIV test kits at all facilities,
    - one stock card should be used for each different expiration of each product
    - update the stock card each time products are received, issued or dispensed, and when losses/adjustments to inventory occur
- Arrange products in storeroom or cabinets so product labels and expiry dates are easily visible to facilitate identification and access to products,
- Arrange products by expiration date in the warehouse or storeroom to facilitate issuing or dispensing according to First-to-Expire, First Out (FEFO),
- Conduct visual inspection and a physical count each time products are received into storage and record the quantities received and any remarks on the stock card,
- Conduct visual inspection and physical count of products in stock on a routine basis and record the quantities of stock on hand and any remarks on the stock card,
- Keep stock card physically close to the product to facilitate recording and updating stock data when issuing or dispensing.

A recent effort by the M&E Unit to distribute standardized MOHS Inventory Control Cards to all facilities should be supported by training in basic stockkeeping practices and instructions on how to correctly record data on the stock card for each product.

2. Storage Conditions

The most pressing storage issues for the national HIV/AIDS program are insufficient storage space at the central level, and the difficulties in maintaining refrigeration at required temperatures for products that require cold storage. The storage space at Laka warehouse and Connaught Referral Hospital is inadequate for the current volume of commodities, and will not be able to accommodate program expansion. In addition, the lack of a continuous power supply to maintain cold storage for commodities that require refrigeration, both at the central level and at facilities, poses a significant challenge for the program at this time.

The additional US$150,000 recently awarded under the Global Fund Round 6 grant to build additional storage space and to refurbish existing structures to provide cold storage for ARV drugs and HIV test kits that require refrigeration will help to alleviate these constraints.

The following additional recommendations are offered to help address these challenges:

- Remove all expired and damaged products from storage to maximize current storage space available,
- Closely monitor available storage space at Laka warehouse and shipment delivery schedules to assess the volume of commodities being shipped and adjust shipment quantities and delivery dates if needed to accommodate storage space constraints,
- Re-consider the role of Connaught Referral Hospital as a satellite storage and distribution point for districts to collect their ARV drugs and HIV test kits; consider another location in Freetown to be able to accommodate program expansion, or consider a re-design of the logistics system to include storage and distribution of stocks from districts,
- Install functioning thermometers and implement consistent use of temperature monitoring charts to identify when and where temperature requirements cannot be met,
- Provide maximum ventilation in all storage areas to maintain room temperature requirements for ARVs and HIV test kits that do not require refrigeration,
- Since the building structure at Laka was not originally designed as a warehouse, product handling at the Laka warehouse is hampered by the lack of loading/unloading and staging areas for receiving and issuing, narrow stairs down to the main stores room on the lower level, and low ceilings in the main store room. These factors, amongst many others, should be taken into consideration in the construction of new warehouse space and in the selection and refurbishment of existing structures in the future. (see "Guidelines for Warehousing Health Commodities" in the *References* section of this report).

3. Distribution and Transport

An additional US$60,000 under the Global Fund Round 6 grant was recently awarded to purchase a refrigerated vehicle for transport of HIV/AIDS commodities that require cold chain.

It is recommended to:

- Conduct an assessment of the transport capacity of the vehicle to determine the volume of commodities that can be carried and to plan a schedule of delivery routes to support distribution to districts to maximize use of the vehicle,
- A budget line item should be assigned to cover maintenance and repair costs of the refrigerated vehicle,
- Consider combining collection of HIV/AIDS commodities from Freetown by districts with available transport, with delivery to other districts with transport constraints as an option to address some of the distribution challenges as the program expands and the volume of commodities to be distributed increases.

4. Maximum/minimum Inventory Control System

Another of the short-term recommendations is the need to design and implement a maximum/minimum inventory control system for ARV drugs and HIV test kits. While system design and implementation occurs in phases over the medium-term, it will be important to initiate the first phase of the design of the logistics system for ARV drugs and HIV test kits as soon as possible.

Maximum and minimum stock levels based on established order intervals, lead times, buffer stocks, available storage space and other program considerations and constraints should be set for the central level and for facilities. This will enable facilities to correctly calculate their order quantities and monitor their stock levels, and allow the national program to effectively quantify, procure, distribute and monitor stock levels throughout the in-country supply pipeline to avoid stockouts and overstocking.

A maximum/minimum inventory control system must be designed and implemented in conjunction with a standardized logistics management information system (LMIS*) (see below)* and should be based on the input, participation and consensus of stakeholders who will be responsible for monitoring and managing the commodities at all levels of the logistics system.

5. Logistics Management Information System

A logistics management information system (LMIS) for routine collection, reporting, and analysis of logistics data on consumption, losses/adjustments and stock balances of ARV drugs and HIV test kits from all facilities should be designed and implemented in conjunction with the maximum/minimum inventory control system *(see above)*.

- In addition, data on the number of patients on treatment at each ART site, by regimen, should also be routinely collected and reported as part of the LMIS for ARV drugs, as well as data on the number of new patients expected to initiate ART in the following reporting period. This data will be used to validate order quantities from facilities, to estimate the quantities of ARV drugs needed for new patients, and to inform the forecasting assumptions for quantification and procurement of the right quantities of the right ARV drugs to support scale up of the national program.

- For the LMIS for HIV test kits, additional data on the number of HIV tests used by purpose of testing; i.e. for VCCT, PMTCT, HIV diagnostic testing, blood safety and quality control, should also be routinely collected and reported. This data will used to monitor program performance for each use of HIV test kits and to inform the forecasting assumptions for quantification and procurement of the right quantities of the right HIV test kits to support scale up of the national.

6. Product Selection, Registration and Use

a) Improve provider knowledge about ARV drugs and management of ARV drug regimens

Given the deficiencies in provider knowledge about ARV drug formulations and management of ARV drug regimens noted during the assessment, it is recommended to conduct a provider refresher training in ART and management of ARV drug regimens (to include clinicians, HIV/AIDS counselors, adherence counselors, nurses, pharmacy, and warehousing staff) to improve provider knowledge and understanding about:

- ARV drug nomenclature and formulations (international non-proprietary names; originator vs. generic names of ARV drug products; description of drug products by strength, dosage form, and presentation; single drug formulations vs. double and triple fixed-dose combination drugs),
- What constitutes a first line vs. a second line ARV drug regimen; the composition of the standard and alternate first and second line ARV drug regimens for Sierra Leone; ARV drugs that are contraindicated to be used together within the same regimen, e.g. stavudine (d4T) and didanosine (ddI)
- The use of single drug, double and triple fixed-dose combination drug formulations to facilitate patient adherence and to accommodate single drug substitutions within a regimen, and
- Correct dosing of pediatric liquid formulations, and the use of pediatric triple fixed-dose combination tablets

b) Replace quantities of d4T40mg stavudine to be procured by the program with d4T30mg stavudine according to the recent addendum to the 2006 WHO ART Guidelines

Consider changing the current two year forecast and quantification of ARV drugs under the Global Fund Round 6 proposal to substitute all quantities of d4T40mg products to be procured (in single drug, double and triple fixed-dose combination drug formulations) with d4T30mg products per the latest addendum to the 2006 WHO Guidelines on Antiretroviral Therapy for HIV Infection in Adults and Adolescents.

c) Harmonize the ARV drugs listed on the NEML and registered in the country with the National ART Guidelines

Inconsistencies between the ARV drug regimens recommended in the national ART guidelines, the ARV drugs on the NEML, and the ARV drugs registered in the country should be addressed. The selection of ARV drugs being procured and used in the country should reflect current recommended practice and meet regulatory requirements to ensure the quality of care, facilitate prescribing and dispensing, and support patient adherence to treatment. The supply chain implications for forecasting, quantification, procurement and inventory management of the selected products should also be considered in the selection process.

Because of the rapidly evolving changes in treatment guidelines for ART, and the emerging availability of new and improved ARV drug products on the market, a more frequent review and update of the national ART guidelines and the list of ARV drugs on the NEML is recommended at least every two years, as well as an accelerated process for registration of ARV drugs.

d) Reconsider the selection of single drug and fixed-dose combination drug formulations to be procured by the program

Changes in the current selection of single drug formulations and fixed-dose combination drug formulations (double and triple) should be considered in order to facilitate dispensing and patient adherence when single drug substitutions within a regimen must be made.

For example, for patients who need to substitute nevirapine with efavirenz within the standard first line regimen currently supplied in the triple fixed-dose combination tablet Triomune 30, NAS could procure quantities of the double fixed-dose combination drug (stavudine(d4T)30mg/ lamivudine (3TC)150mg) that patients can take twice a day along with one 600mg tablet of efavirenz once a day to complete the single drug substitution within the regimen. Currently, only single drug formulations of stavudine (d4T) 30mg capsules and lamivudine (3TC) 150mg tablets have been procured by the program. This means more drug products to be managed by facility staff and more pill burden for patients who have to take three single drugs once a day (one d4T 30mg capsule plus one 3TC 150mg tablet plus one EFV 600mg tablet), and two single drugs (one d4T 30 mg capsule plus one 3TC 150mg tablet) at another time during the day to comply with the regimen.

e) Include additional consumable supplies needed to perform HIV testing and bottles of Chase Buffer solution as separate items to be quantified and procured

The program should consider procuring and supplying the additional consumable items required to perform an HIV test - lancets (for finger prick), needles, syringes, vacutainers (for venipuncture and transport of blood samples for quality control testing), cotton wool, gloves and chlorhexidene disinfectant solution - together with the HIV test kits. While some consumable items are included in the essential drug kits distributed to districts and PHUs, this supply is to cover all needs at the health facilities and cannot be counted on to ensure that the additional consumable items needed to perform HIV testing are always available.

Another recommendation is to consider ordering additional bottles of the Chase buffer solution used with the Determine HIV-1/2 rapid tests separately from the test kits. The amount of solution in one bottle is insufficient to cover the need for re-testing of blood samples or if more than one drop per test is used or wasted during the testing procedure.

7. Forecasting and Quantification of Commodity Requirements

One of the major supply chain challenges for a national HIV/AIDS program striving to scale-up services is to be able to forecast, quantify and procure the needed commodities in a timely and well-informed manner that meets the needs of the patients and clients to be reached.

a) Build capacity in forecasting methodologies and use of tools for quantification of ARV drugs and HIV test kits at NAS and the MOHS.

It will be critical for the program to build capacity in forecasting methodologies and use of tools for quantification of ARV drugs and HIV test kits at NAS and the MOHS in the short term. Any capacity building activities in forecasting and quantification of ARV drugs and HIV test kits should include a range of stakeholders from NAS, the MOHS, donor agencies, and implementing partners that fund and procure commodities and provide technical assistance to the national HIV/AIDS program in Sierra Leone.

The following recommendations should guide the capacity building activities:

- Prepare medium-term forecasts for a two year period for ARV drugs and HIV test kits to identify potential funding gaps and mobilize resources for timely procurement and delivery to be able to ensure continuous availability of products for patients and clients.
- Conduct a national level quantification exercise for estimating ARV drug requirements that includes input from a broad range of providers on patient responses to treatment, (clinicians, prescribers, pharmacy technicians/dispensers, HIV/AIDS counselors, and adherence counselors from each level of service delivery), as well as program managers, clinical experts, pharmacists and procurement officers to inform the forecast assumptions used to quantify the ARV drug requirements.
- The forecasting methodology should include assumptions about the number of patients expected to continue treatment during the forecast period; the expected rates of drug substitution within regimens and rates of switch from first to second line regimens; and the number of new patients expected to initiate treatment during the forecast period according to scale-up plans and service capacity.
- These recommendations should be combined with efforts to improve the availability and quality of data on the number of patients on ART, by regimen, at all ART sites and an analysis of trends in regimen changes over time.
- The forecasting methodology for estimating HIV test kit requirements should include data and input from key stakeholders on the numbers of people tested, HIV prevalence and discordance rates by purpose of testing, i.e. VCCT, PMTCT, HIV diagnostic testing, and blood safety; data on the number of blood samples being tested for quality control; and wastage rates. Additional information on the number of clients expected to be tested for each purpose of testing during the forecast period according to scale-up plans and service capacity should also be included in the forecast assumptions.
- The quantification of the ARV drug and HIV test kit requirements to be procured should include steps to calculate the additional quantities of product required to maintain established maximum/minimum stock levels taking into account procurement and supplier lead times, buffer stock, and existing inventory levels in the country at the time of the quantification.
- The forecast and quantification of ARV drug and HIV test kit requirements should be updated at least every six months, to keep up with expansion of ART and HIV testing services and to be able to respond to changes in patient responses to ART over time which will require procurement of different combinations and quantities of ARV drugs.

b) Given the recent amendment to the PMTCT guidelines for ARV prophylaxis, the forecast and quantification of AZT and 3TC tablets for mothers and oral solutions for infants to be procured for the program will need to be updated for 2007.

8. Financing and Procurement of Commodities

a) Need for partner coordination in financing and procurement of HIV/AIDS commodities

One of the key challenges for the HIV/AIDS program in Sierra Leone described in the findings is coordination of the multiple sources of funding, procurement mechanisms, and to a lesser degree, the in-country distribution systems for ARV drugs and HIV test kits. A concerted and sustained effort by NAS, MOHS, donors, and implementing partners will be required to be able to ensure a continuous supply of the right products in the right quantities into the country, and their availability at facilities for the people that need them.

The key tasks and objectives of partner coordination in financing and procurement of HIV/AIDS commodities should be to:

- Identify and coordinate the sources, amounts and timing of funding commitments and disbursements,
- Agree on which products and what quantities of products will be procured by each funding source,
- Plan and coordinate the procurement lead times, quantities, supplier lead times and shipment delivery schedules of different partners to ensure a continuous supply of commodities to the country, and
- Streamline in-country storage and distribution to facilities through the current distribution system managed by NAS as the recommended mechanism.

b) Logistics Working Group

Create a Logistics Working Group as a mechanism for stakeholders and implementing partners to meet regularly to share information on the status of HIV/AIDS commodities in the country, to coordinate and maximize the use of resources for procurement of commodities, to address problems in the HIV/AIDS supply chain, and to advocate for and support capacity building and institutionalization of logistics management capacity in the country.

B. MEDIUM-TERM RECOMMENDATIONS

a) Implementation of a maximum/minimum inventory control system and a standardized LMIS for ARV drugs and HIV test kits

As mentioned in the short term recommendations, there are several phases in the design and implementation of a national maximum/minimum inventory control system and an LMIS. The preliminary design and documentation of the logistics system structure and standard operating procedures must take place first, while implementation is a medium-term activity which requires official approval and dissemination of standard operating procedures for logistics management of ARV drugs and HIV test kits, capacity building of in-country staff to be tasked with logistics management responsibilities at the central level, and a national roll-out plan for training and implementation of the maximum/minimum inventory control system and the LMIS at all facilities in the country.

b) Capacity building in logistics management should include stakeholders in both NAS and the MOHS to facilitate the transfer of logistics management skills and authority from NAS to MOHS when implementation of the national program is returned to the MOHS

A smooth transition of responsibility and authority for management of the logistics system for HIV/AIDS commodities and for transfer of logistics management skills and capacity to the MOHS will be critical to maintaining a continuous and sustainable supply of commodities for the HIV/AIDS program when the MOHS takes over implementation of the program again in 2008. Logistics management capacity at the central level should include skills in forecasting and quantification, coordination of financing and procurement planning, inventory management, storage and distribution, and ability to monitor and manage the logistics management information system for ARV drugs and HIV test kits.

c) Develop a national HIV/AIDS Commodity Security Strategy

The final recommendation is to develop a national HIV/AIDS commodity security strategy as a cornerstone of the national response to the HIV/AIDS epidemic to include a sustainability plan to ensure medium to long-term financing for procurement of all HIV/AIDS commodities.

V. CONCLUSIONS

It will be critical for NAS to implement the short term recommendations from this supply chain assessment within the next six to twelve months to be able to ensure the quality and availability of the ARV drugs and HIV test kits procured for the program, and to be able to respond to the increased demand for commodities as the national response to HIV/AIDS is scaled-up in Sierra Leone. Specifically,

- Implement basic stockkeeping practices at the central level and at all facilities to ensure the quality of the ARV drugs and HIV test kits in stock, and to be able to monitor the quantities of stock on hand in the program,
- Expand storage space and improve storage conditions to accommodate program expansion and ensure the quality of the commodities being procured, distributed and used,
- Improve knowledge about ARV drugs and management of ARV drug regimens of ART providers and staff responsible for management of the commodities,
- Conduct a logistics system design workshop to design a standardized LMIS and a maximum/minimum inventory control system for collecting, reporting and analyzing logistics data to be able to efficiently and effectively monitor and manage consumption and stock levels of ARV drugs and HIV test kits in the country and maintain a continuous supply of products while avoiding overstocking and stockouts,
- Conduct a national quantification exercise to introduce and build capacity in forecasting methodologies and tools for quantification and procurement planning of ARV drugs and HIV test kits,
- Create a Logistics Working Group to address the need for coordination of multiple funding sources, procurement mechanisms and timelines, and the in-country distribution of HIV/AIDS commodities amongst stakeholders and implementing partners to ensure a continuous supply of the right quantities of the right products into the country.

There are other supply chain interventions that will need to be implemented over the medium-term of one to three years if significant strengthening of the logistics system for ARV drugs and HIV test kits and institutionalization of logistics management capacity at NAS and the MOHS are to be achieved. These include:

- Development, approval and dissemination of standard operating procedures for the logistics system for ARV drugs and HIV test kits,
- Development and implementation of a national roll-out plan for training, piloting, and implementing the LMIS and the maximum/minimum inventory control system for ARV drugs and HIV test kits,
- Development of a national Commodity Security Strategy to ensure long-term sustainability of financing for all HIV/AIDS commodities.

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APPENDICES

APPENDIX A. SCOPE OF WORK

Appendix A. Scope of Work

Scope of Work
Technical Assistance to the
Ministry of Health and Sanitation of Sierra Leone

Supply Chain Assessment for ARV Drugs and HIV Tests
April 2 – 20, 2007

USAID | DELIVER PROJECT

Background:

In February 2006, DELIVER provided technical assistance to the Ministry of Health and Sanitation of Sierra Leone to estimate contraceptive requirements and prepare CPTs for 2006, 2007 and 2008. During the same visit DELIVER conducted a contraceptive security sensitization workshop for high level policy and decision makers. As a follow up to the recommendations of this workshop, a contraceptive security assessment was carried out in July 2006 by a national consultant with technical assistance from DELIVER. Based on the findings from the assessment, DELIVER assisted the contraceptive security committee to develop the contraceptive security strategic plan in collaboration with AWARE-RH. Funding for these activities was provided by USAID/West Africa.

USAID | DELIVER PROJECT West Africa 2007 workplan with funding from USAID|West Africa plans to:

- assess the current supply chains for ARV drugs and HIV test kits,
- design an effective supply chain for ARV drugs and HIV test kits, and
- train health professionals to strengthen the newly designed supply chain for ARV drugs and HIV test kits.

The technical assistance under this Scope of Work will address the assessment of the ARV drug and HIV test kit supply chains.

The MOHS has already identified challenges in the following areas of supply chain management of ARV drugs and HIV tests: (1) forecasting, (2) inventory management, and (3) commodity information system

Purpose of the Technical Assistance:

To assist the Ministry of Health and Sanitation in conducting an assessment of the current supply chains for ARV drugs and HIV test kits and the capacity of the National AIDS Secretariat for forecasting, management and distribution of ARV drugs and HIV test kits for the national program. Based on the assessment findings, provide recommendations to address the supply chain issues identified and to improve overall supply chain management of ARV drugs and HIV test kits in the National AIDS Secretariat.

The assessment activities will focus on the following areas of supply chain management of ARV drugs and HIV test kits:

- policy and regulatory environment for selection, registration and use of ARV drugs and HIV tests,
- capacity at the National AIDS Secretariat for forecasting, quantification and supply planning,
- inventory management procedures, distribution systems and storage conditions for ARV drugs and HIV test kits,
- sustainability of financing for procurement of ARV drugs and HIV test kits,
- management information systems for monitoring and managing consumption and stock levels of ARV drugs and HIV test kits for the national program

Assessment Methodology

Three DELIVER logistics advisors will be responsible for planning the assessment in collaboration with counterparts at the National AIDS Secretariat, and will travel to Sierra Leone for three weeks (on or about April 2-20, 2007) to conduct the assessment.

1) Pre-visit preparation activities will include:

- Review of relevant policy and technical documents
- Draft standardized assessment tools (interview guides, data collection tools)
- Select assessment team members
- Collaborate with the National AIDS Secretariat on site selection for field visits

2) In-country work will include:

- Finalize selection of assessment teams
- Train assessment team members in use of data collection tools and pilot test tools
- Finalize data collection tools based on pilot results
- Finalize selection of ART and HIV testing sites and itinerary for field visits
- Finalize administrative and logistics arrangements for field visits
- Continue collection and review of policy and technical documents
- Conduct central level interviews with key stakeholders; policy makers, program managers, donor agencies, and service providers (e.g. pharmacists, clinicians, laboratory technicians, counselors)
- Conduct field visits to selected ART and HIV testing sites to interview service providers, observe storage conditions and stockkeeping practices, and to collect data on ARV drug and HIV test consumption and stock levels
- Conduct data analysis and discussion of key assessment findings with assessment teams
- Prepare and present preliminary assessment findings at end of technical assistance visit

3) Final technical report will be completed by the DELIVER advisors in Arlington, Virginia

Deliverables:

1. Finalized set of assessment tools
2. Training of assessment team members in use of data collection tools
3. Presentation on preliminary assessment findings and recommendations
4. Draft DELIVER technical assistance record submitted at time of departure
5. Full technical report to be submitted by end of May.

APPENDIX B. LIST OF PERSONS CONTACTED

Appendix B. List of Persons Contacted

List of Persons Contacted			
Name	**Title**	**Organization**	**Contact Info**
Dr. Brima Kargbo	Acting Director	National HIV/AIDS Secretariat, ARG/MOHS	arg_health@yahoo.com Tel: +232 22 235842 Mob: 076-960071 Mob: 033-317902
Abdul Rahman. C. Sessay	Acting Deputy Director & CCSI Coordinator	National HIV/AIDS Secretariat, ARG/MOHS	arcsessay@yahoo.com Mob: 076-664222 Mob: 033-324570
Lamin Bangura	M & E Unit Coordinator	National HIV/AIDS Secretariat, ARG/MOHS	laminbangs2007@yahoo.com Mob: 033-844776
Kiskama Swarray	M & E Unit	National HIV/AIDS Secretariat, ARG/MOHS	Mob: 076-447295 Mob: 033-535259
Valentine Young	Procurement Specialist	National HIV/AIDS Secretariat, ARG/MOHS	Mob: 076-681522
Moi-Tenga Sartie	Acting VCCT/ART Coordinator	National HIV/AIDS Secretariat, ARG/MOHS	Mob:
Sister Hossanatu Kanu	PMTCT Coordinator	National HIV/AIDS Secretariat, ARG/MOHS	Mob:
Abdul Karim Kargbo	Stores Manager, Laka Warehouse	National HIV/AIDS Secretariat, ARG/MOHS	Mob: 030-230913
Richard B. Mansaray	Data Entry Clerk, Laka Warehouse	National HIV/AIDS Secretariat, ARG/MOHS	Mob:
Manjo A. Lamin	CHO, HIV/AIDS Counselor, Kailahun	National HIV/AIDS Secretariat, ARG/MOHS	Mob:
Alusine Kamara	CHO, HIV/AIDS Counselor, Kambia	National HIV/AIDS Secretariat, ARG/MOHS	Mob:
Senesie Margao	CHO, HIV/AIDS Counselor, Kenema	National HIV/AIDS Secretariat, ARG/MOHS	Mob:
Alimamy Sesay	CHO, HIV/AIDS Counselor, Freetown	National HIV/AIDS Secretariat, ARG/MOHS	alimamy02@yahoo.com Mob: 076-871954
Sylvester T. Kamanda	Manager, National Reference Laboratory	National HIV/AIDS Secretariat, ARG/MOHS	Mob: 033-367238
Dr. Arthur C. Williams	Director General of Medical Services	Ministry of Health and Sanitation	Mob:
Dr. Kisito S. Daoh	Director of Hospital and Laboratory Services	Ministry of Health and Sanitation	ksdaoh@yahoo.com Mob: 076-658971 Mob: 033-315375

Name	Title	Organization	Contact Info
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Henry Kuyenbeh	Procurement Manager	Ministry of Health and Sanitation	Mob:
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Boi Jeneh Jalloh	Program Development Specialist	USAID/Sierra Leone, US Embassy, Freetown	bjalloh@usaid.gov Tel: +232 22 515212 Mob: 076-669678
Christine M. Scheckler	Country Program Manager	USAID/Sierra Leone, US Embassy, Freetown	cscheckler@usaid.gov Tel: +232 22 515000 ext 5200 Mob: 076-515000 ext 5200 Mob: 076-612118

APPENDIX C. CONSULTANT ITINERARY

Appendix C. Consultant Itinerary

HIV/AIDS Supply Chain Assessment
National HIV/AIDS Secretariat
The Republic of Sierra Leone

CONSULTANT ITINERARY 1st – 19th April 2007

Date		Place	Activity
Sunday, April 1st		Freetown	• **HIV/AIDS Supply Chain Assessment Team Arrives in Sierra Leone:** - Claudia Allers, Public Health Logistics Advisor, USAID | DELIVER PROJECT - Tim O'Hearn, Public Health Logistics Advisor, USAID | DELIVER PROJECT - Meba Kagone, Senior Program Manager, USAID | DELIVER PROJECT (arrival Monday April 2, 2007)
Monday, April 2nd		Freetown – Allers, O'Hearn	• **Meeting with Acting Director of the National HIV/AIDS Secretariat (NAS):** - Dr. Brima Kargbo, Acting Director National HIV/AIDS Secretariat (NAS)**,** Freetown, Sierra Leone.
Tuesday, April 3rd		Freetown – Allers, Kagone, O'Hearn	• **Meeting with National HIV/AIDS Secretariat (NAS) and Ministry of Health and Sanitation (MOHS) staff to discuss the scope and schedule of the assessment activities:** - Dr. Brima Kargbo, Acting Director National HIV/AIDS Secretariat **,** Freetown, Sierra Leone - Abdul Rahman C. Sessay, Acting Deputy Director, Community and Civil Society Initiative (CCSI) Coordinator - Moi-Tenga Sartie, Acting VCCT/ART Coordinator, NAS/MOH&S - Alusine Kamara, Community Health Officer (CHO) HIV/AIDS Counselor, Kambia, NAS/MOH&S - Lamin Bangura, Monitoring and Evaluation (M&E) Unit, AIDS Response Group (ARG), NAS - Kiskama Swarray, Monitoring and Evaluation (M&E) Unit, AIDS Response Group (ARG), NAS

Date		Place	Activity
		Freetown – Allers, Kagone, O'Hearn	• **Visit to Curney Barnes Memorial Hospital – First pilot test of Facility Level Assessment Tool:** - Dr. Kojo Carew, Medical Director - Mr. Lahai Koroma, Hospital Nurse
		Freetown – Allers, Kagone, O'Hearn	• **Discussion with VCCT/ART Coordinator and MOH&S Staff** - Moi-Tenga Sartie, Acting VCCT/ART Coordinator - Lamin Bangura, M&E Unit, AIDS Response Group, National HIV/AIDS Secretariat (ARG/NAS) - Kiskama Swarray, AIDS Response Group, National HIV/AIDS Secretariat (ARG/NAS)
Wednesday, April 4th		Freetown – Allers, Kagone, O'Hearn	• **Conduct workshop for field assessment team members to review and train in use of Facility Level Assessment Tools for ARV Drugs and HIV Test Kits:** - Richard B. Mansaray, Data Entry Clerk, NAS/GF - Manjo A. Lamin, CHO, HIV/AIDS Counselor, NAS/MOH&S Kailahun - Lamin Bangura, M&E Unit, ARG/NAS - Moi-Tenga Sartie, Acting VCT/ARTCoordinator - Abdul Karim Kargbo, Stores Manager, NAS/MOH&S - Alusine Kamara, CHO, HIV/AIDS Counselor, Kambia, NAS/ MOH&S - Senesie Margao, CHO,HIV/AIDS Counselor, Kenema, NAS/MOH&S - Alimamy Sesay, CHO, HIV/AIDS Counselor, FreetownNAS/MOH&S - Kiskama Swarray, AIDS Response Group (ARG), NAS/ MOH&S

Date		Place	Activity
		Freetown – Allers, Kagone, O'Hearn	• **Pilot Test Facility Level Assessment Tools (3 ART and HIV Testing Sites/3 Teams)** - **Connaught Government Hospital** 1. Richard B. Mansaray, Data Entry Clerk, NAS/GF 2. Manjo A. Lamin, CHO/HIV/AIDS Counselor, NAS/MOH&S Kailahun 3. Lamin Bangura, M&E Unit, ARG/NAS 4. Claudia Allers, Public Health Logistics Advisor, USAID | DELIVER PROJCT - **Rokupa Government Hospital** 1. Moi-Tenga Sartie, Acting VCCT/ART Coordinator 2. Abdul Karim Kargbo, Stores Manager, NAS/MOH&S 3. Alusine Kamara, CHO/HIV/AIDS Counselor, Kambia, NAS/MOH&S 4. Meba Kagone, Senior Program Manager, USAID | DELIVER PROJECT - **United Methodist Church (UMC) Hospital** 1. Senesie Margao, CHO/HIV/AIDS Counselor, Kenema, NAS/MOH&S 2. Alimamy Sesay, CHO/ HIV/AIDS Counselor, Freetown, NAS/MOH&S 3. Kiskama Swarray, AIDS Response Group (ARG), NAS/MOH&S 4. Tim O'Hearn, Public Health Logistics Advisor, USAID | DELIVER PROJECT
Thursday, April 5th		Freetown – Allers, Kagone, O'Hearn	• **Meeting with Field Assessment Team Members** to discuss site visits and finalize adaptation of Facility Level Assessment Tools for Sierra Leone.
		Freetown – Allers, Kagone, O'Hearn	• **Meeting with Acting Director of NAS to finalize preparations for Field Visits and discuss activities for the final week of the assessment.** - Dr. Brima Kargbo, Acting Director National HIV/AIDS Secretariat (NAS)**,** Freetown, Sierra Leone.
		Freetown – Allers, Kagone, O'Hearn	• **Meeting with MOHS Director General of Medical Services, Dr. Arthur C. Williams, and Director of Hospital and Laboratory Services, Dr. Kisito Daoh.**

Date		Place	Activity
Friday, April 6th		Western Area, Laka Warehouse – Allers, Kagone, O'Hearn	• **Conduct site visits in Western Area** to collect data on ARV drug and HIV test kit stock levels, ordering and distribution schedules, and storage conditions. Conduct interviews with staff at Laka Warehouse and the National Reference Laboratory.
Saturday, April 7th		Freetown – Allers, Kagone, O'Hearn	• **USAID | DELIVER PROJECT Team** Complete final preparations for Field Visits
Monday, April 9th to Thursday, April 12th		Field Visits to Six District Govt Hospitals and one PHU in each District.	• **Field Visits Conducted in Six Districts, Three Assessment Teams composed of Individuals from Central and District Levels of NAS/MOH&S and USAID | DELIVER PROJECT Logistics Advisors** - Northern Province: Kambia and Port Loko Districts - Northern Province: Bombali and Tonkolili Districts - Eastern Province: Bo and Kenema Districts
Friday, April 13th		Freetown – Allers, Kagone, O'Hearn	• **Field Assessment Team Meeting – Review and Validate Field Assessment Findings** - Richard B. Mansaray, Data Entry Clerk, NAS/GF - Manjo A. Lamin, CHO/HIV/AIDS Counselor, NAS/MOH&S Kailahun - Lamin Bangura, M&E Unit, ARG/NAS - Moi-Tenga Sartie, Acting VCCT/ART Coordinator - Abdul Karim Kargbo, Stores Manager, NAS/MOH&S - Alusine Kamara, CHO/HIV/AIDS Counselor, Kambia, NAS/MOH&S - Senesie Margao, CHO/HIV/AIDS Counselor, Kenema, NAS/MOH&S - Alimamy Sesay, CHO/HIV/AIDS Counselor, Freetown NAS/MOH&S - Kiskama Swarray, AIDS Response Group (ARG), NAS/MOH&S - Claudia Allers, Public Health Logistics Advisor - Tim O'Hearn, Public Health Logistics Advisor - Meba Kagone, Senior Program Manager
Saturday, April 14th		Freetown – Allers, Kagone, O'Hearn	• **USAID | DELIVER PROJECT Team Meeting** to plan and prepare for Stakeholder Joint Discussion Group meeting.
Sunday, April 15th		Freetown – Allers, Kagone, O'Hearn	• **USAID | DELIVER PROJECT Team Meeting** to evaluate Assessment Findings and Recommendations and prepare for Stakeholder Debriefing meeting.

Date		Place	Activity
Monday, April 16th		Freetown – Allers, Kagone, O'Hearn	- **Meeting with Acting Director of NAS, Dr. Brima Kargbo** to discuss key areas of policy and regulatory guidelines for Product Selection and Use, Importation, Registration, Forecasting and Quantification Process and Methodologies, Procurement and Supply Planning Procedures and Timelines, Funding Sources and Commitments for Commodity Procurement, and the Partnership Forum
		Freetown – Allers, Kagone, O'Hearn	- **Meeting with Mr. Valentine Younge, KPMG Procurement Specialist at NAS** to discuss Procurement Processes, Lead Times, and Shipment Schedules for ARV drugs and HIV test kits for the national program.
Tuesday, April 17th		Freetown – Allers, Kagone, O'Hearn	- **Conduct Stakeholder Joint Discussion Group** to discuss Sources of Financing, Procurement Mechanisms and Storage/Distribution Systems for ARV Drugs and HIV Test Kits for the national HIV/AIDS program.
Wednesday, April 18th		Freetown – Allers, Kagone, O'Hearn	- **Meeting with Ms. Macoura Oulare, Project Officer, HIV/AIDS and Mr. Salie Diallo, Communications Officer HIV/AIDS, UNICEF** - **Meeting with Mr. Henry Kuyenbeh, MOHS Procurement Manager** - **Prepare for Stakeholder Debriefing on HIV/AIDS Supply Chain Assessment -**Preliminary Findings and Recommendations
Thursday, April 19th		Freetown – Allers, Kagone, O'Hearn Allers, O'Hearn	- **Conduct Stakeholder Debriefing on HIV/AIDS Supply Chain Assessment -** Preliminary Findings and Recommendations - **Debriefing at USAID**, Ms. Boi Jeneh Jalloh, Program Development Specialist (for Christine Scheckler, Country Program Manager) - **Depart Freetown**

APPENDIX D. SCHEDULE OF FIELD VISITS

Appendix D. Schedule of Field Visits

HIV/AIDS Supply Chain Assessment

National HIV/AIDS Secretariat
The Republic of Sierra Leone

Schedule of Assessment Field Visits: April 9th – 12th, 2007

Province	District	Facility	Team Members
Western Area Urban		1. Connaught Hospital	1. Richard B. Mansaray, Data Entry Clerk, NAS/GF 2. Manjo A. Lamin, CHO/HIV/AIDS Counselor, NAS/MOH&S Kailahun 3. Lamin Bangura, M&E Unit, ARG/NAS 4. Claudia Allers, Public Health Logistics Advisor, USAID | DELIVER PROJECT
		2. United Methodist Church Hosptial (UMC)	1. Senesie Margao, CHO/HIV/AIDS Counselor, Kenema, NAS/MOH&S 2. Alimamy Sesay, CHO/HIV/AIDS Counselor, Freetown, NAS/MOH&S 3. Kiskama Swarray, AIDS Response Group (ARG), NAS/MOH&S 4. Tim O'Hearn, Public Health Logistics Advisor, USAID | DELIVER PROJECT
		3. Rokupa Govt Hospital	1. Moi-Tenga Sartie, Acting VCCT/ART Coordinator 2. Abdul Karim Kargbo, Stores Manager, NAS/MOH&S 3. Alusine Kamara, CHO/HIV/AIDS Counselor, Kambia, NAS/MOH&S 4. Meba Kagone, Senior Program Manager, USAID | DELIVER PROJECT
Northern			
	Bombali	1. Makeni District Government Hospital	1. Richard B. Mansaray, Data Entry Clerk, NAS/GF 2. Manjo A. Lamin, CHO/HIV/AIDS Counselor, NAS/MOH&S Kailahun 3. Lamin Bangura, M&E Unit, ARG/NAS 4. Claudia Allers, Public Health Logistics Advisor, USAID | DELIVER PROJECT
		2. Binkolo Community Health Center	
	Tonkolili	1. Magburaka District Government Hospital	
		2. Mile 91 Community Health Center	
Northern			
	Port Loko	1. Port Loko District Government Hospital	1. Moi-Tenga Sartie, Acting VCCT/ART Coordinator 2. Abdul Karim Kargbo, Stores Manager, NAS/MOH&S 3. Alusine Kamara, CHO/HIV/AIDS Counselor, Kambia, NAS/MOH&S 4. Meba Kagone, Senior Program Manager, USAID | DELIVER PROJECT
		2. Lunsar Community Health Center	
	Kambia	1. Kambia District Government Hospital	
		2. Mambolo Community Health Center	

Province	District	Facility	Team Members
Eastern			
	Kenema	1. Kenema District Government Hospital	1. Senesie Margao, CHO/HIV/AIDS Counselor, Kenema, NAS/MOH&S 2. Alimamy Sesay, CHO/HIV/AIDS Counselor, Freetown, NAS/MOH&S 3. Kiskama Swarray, AIDS Response Group (ARG), NAS/MOH&S 4. Tim O'Hearn, Public Health Logistics Advisor, USAID | DELIVER PROJECT
		2. Joru Guara Community Health Center	
	Bo	1. Bo District Government Hospital	
		2. Yamdu Community Health Center	

APPENDIX E. LIST OF ART, VCCT AND PMTCT SITES

LIST OF ART SITES - April 2007

No.	Sites	Districts	Chiefdom	Town/Village
1	Connaught Government Hospital	Western Area Urban	Western Area	Freetown
2	UMC Hospital	Western Area Urban	Western Area	Freetown
3	Lumley Government Hospital	Western Area Urban	Western Area	Freetown
4	34 Military Hospital	Western Area Urban	Western Area	Freetown
5	Rokupa Government Hospital	Western Area Urban	Western Area	Freetown
6	Curney Barnes Memorial Hospital	Western Area Urban	Western Area	Freetown
7	Tombo Community Health Centre	Western Area Rural	Western Area	Tombo
8	Makeni Government Hospital	Bombali	Bombali Shebora	Makeni
9	Binkolo Community Health Centre	Bombali	Safroko Limba	Binkolo
10	Kathantha Community Health Centre	Bombali	Sella Limba	Kathantha Yimbor
11	Kamabai Community Health Centre	Bombali	Briwa	Kamabai
12	Kalangba Community Health Centre	Bombali	Gbendembu Gorwahun	Kalangba
13	Kambia Government Hospital	Kambia	Magbema	Kambia
14	Mambolo Community Health Centre	Kambia	Mambolo	Mambolo
15	Rokupr Community Health Centre	Kambia	Magbema	Rokupr
16	Kychon Community Health Centre	Kambia	Samu	Kychon
17	Tombo-walla Community Health Centre	Kambia	Mombolo	Tombo-walla
18	Kabala Government Hospital	Koinadugu	Wara Wara Yagala	Kabala
19	Kondebaia Community Health Centre	Koinadugu	Diang	Kondebaia
20	Mongo Community Health Centre	Koinadugu	Mongo	Mongo
21	Port Loko Government Hospital	Port Loko	Maforki	Port Loko
22	Petifu-Lokomasama Community Health C	Port Loko	Lokomasama	Petifu-Lokomasama
23	Lunsar Community Health Centre	Port Loko	Marampa	Lunsar
24	Masiaka Community Health Centre	Port Loko	Koya	Masiaka
25	Magburaka Government Hospital	Tonkolili	Kholifa	Magburaka
26	Mile 91 Community Health Centre	Tonkolili	Yoni	Mile 91
27	Yele Community Health Centre	Tonkolili	Gbonkolenken	Yele
28	Bumbuna Community Health Centre	Tonkolili	Kalansogia	Bumbuna
29	Bendugu Community Health Centre	Tonkolili	Sambaia Bendugu	Bendugu
30	Mabang Community Health Centre	Tonkolili	Kholifa Bang	Mabang
31	Makali Community Health Centre	Tonkolili	Konike	Makali
32	Mabontor Community Health Centre	Tonkolili	Kaffe Simira	Mabontor
33	Kailahun Government Hospital	Kailahun	Luawa	Kailahun
34	Jojoima Community Health Centre	Kailahun	Malema	Jojoima
35	Koindu Community Health Centre	Kailahun	Kissi Teng	Koindu
36	Kenema Government Hospital	Kenema	Nongowa	Kenema
37	Joru Guara Community Health Centre	Kenema	Guara	Joru Guara
38	Levuma Community Health Centre	Kenema	Lekpeiama	Levuma
39	Tongo Fields Community Health Centre	Kenema	Lower Bambara	Tongo Fields

LIST OF ART SITES - April 2007

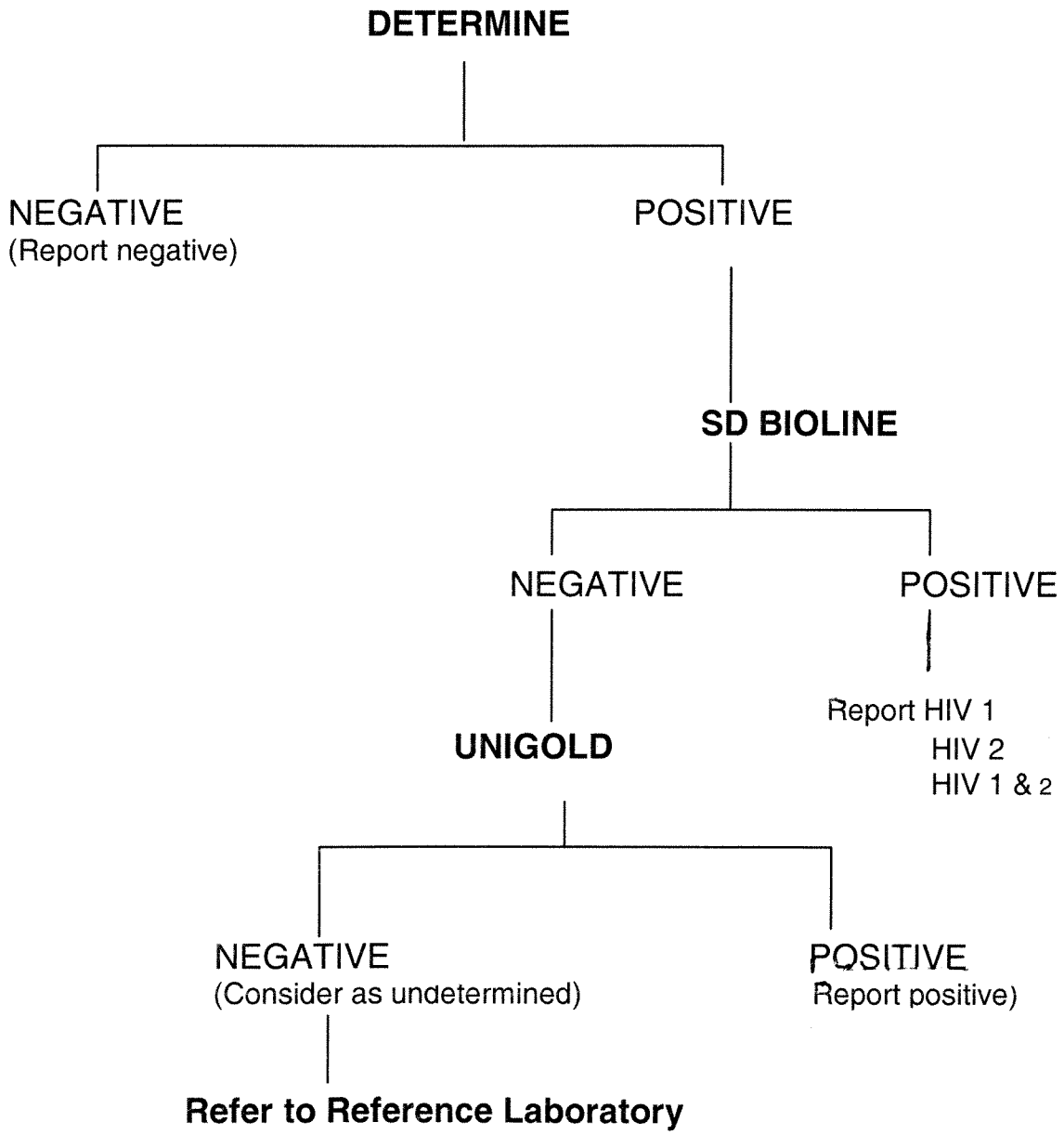
No.	Sites	Districts	Chiefdom	Town/Village
40	Koidu Government Hospital	Kono	Gbense	Koidu
41	N'jaima Sewafe Community Health Centr	Kono	Nimiyama	N'jaima Sewafe
42	Tombodu Community Health Centre	Kono	Kamara	Tombodu
43	Bumpe Community Health Centre	Kono	Nimikoro	Bumpe
44	Gandorhun Community Health Centre	Kono	Gbane	Gandorhun
45	Bo Government Hospital	Bo	Kakua	Bo
46	Sumbuya Community Health Centre	Bo	Lugbu	Sumbuya
47	Yamdu Community Health Centre	Bo	Baoma	Yamdu
48	Bonthe Government Hospital	Bonthe	Bonthe Town	Bonthe
49	Mattru Jong Community Health Centre	Bonthe	Jong	Mattru Jong
50	Moyamba Government Hospital	Moyamba	Kaiyamba	Moyamba
51	Gbangbatoke Community Health Centre	Moyamba	Gbanta	Gbangbatoke
52	Pujehun Government Hospital	Pujehun	Kpanga-Kabonde	Pujehun
53	Bandajuma Community Health Centre	Pujehun	Sowa	Bandajuma
54	Potoru Community Health Centre	Pujehun	Barri	Potoru
55	Bumpe Community Health Centre	Pujehun	Gallinas Perri	Nyandehun

APPENDIX F. HIV TESTING ALGORITHM

HIV TESTING ALGORITHMS

Diagnostic tests including VCCT, PMTCT

- Use three tests
- Testing Methodology - Serial Testing



Updated August 2006, Sierra Leone

APPENDIX G. LIST OF ANTIRETROVIRAL DRUGS AND HIV TEST KITS IN USE AT MOHS FACILITIES

Appendix G. List of ARV Drugs and HIV Test Kits

List of Antiretroviral Drugs – April 2007

National HIV/AIDS Secretariat, Sierra Leone

No.	Originator/ Generic Name	INN Name	Strength/ Form	Pack Size	Manufacturer	Country of Origin	Registered +/-	Included in NEML +/-	Funding Source (√)		
									Govt	GF	UNICEF
1.	Stag-30	Stavudine	30mg capsule	60 cap /bottle	Hetero Drugs	India	+	+			
2.	Stavir-30	Stavudine	30mg capsule	60 cap /bottle	Cipla	India	+	+			
3.	Stag-40	Stavudine[1]	40mg capsule	60 cap /bottle	Hetero Drugs	India	+	+			
4.	Stavir-40	Stavudine[1]	40mg capsule	60 cap /bottle	Cipla	India	+	+			
5.	Heptavir	Lamivudine	150mg tablet	60 tab /bottle	Hetero Drugs	India	+	+			
6.	Triomune 30	Stavudine/ Lamivudine/ Nevirapine	30mg/150mg/ 200mg tablet	60 tab /bottle	Cipla	India		+			
7.	Triomune 40	Stavudine/ Lamivudine/ Nevirapine[1]	40mg/150mg/ 200mg tablet	60 tab /bottle	Cipla	India		+			
		Stavudine/ Lamivudine[2]	30mg/150mg tablet	60 tab /bottle							
8.	Zidolam	Zidovudine/ Lamivudine	300mg/150mg tablet	60 tab /bottle	Hetero Drugs	India	+	+			
9.	Duovir	Zidovudine/ Lamivudine	300mg/150mg tablet	60 tab /bottle	Cipla	India	+	+			
10.	Duovir-N	Zidovudine/ Lamivudine/ Nevirapine	300mg/150mg/ 200mg tablet	60 tab /bottle	Cipla	India					
11.	Zido-H 300	Zidovudine	300mg tablet	60 tab /bottle	Hetero Drugs	India	+	+			
12.	Zidovir	Zidovudine	300mg tablet	60 tab /bottle	Cipla	India	+	+			
13.	Nevivir	Nevirapine	200mg tablet	60 tab /bottle	Hetero Drugs	India	+	+			
14.	Nevimune	Nevirapine	200mg tablet	60 tab	Cipla	India	+	+			

List of Antiretroviral Drugs – April 2007

National HIV/AIDS Secretariat, Sierra Leone

No.	Originator/ Generic Name	INN Name	Strength/ Form	Pack Size	Manufacturer	Country of Origin	Registered +/-	Included in NEML +/-	Funding Source (√)		
									Govt	GF	UNICEF
				/bottle							
15.	?	Efavirenz	200mg	90 cap /bottle	?	?	+				
16.	Estiva-600	Efavirenz	600mg tablet	30 tab /bottle	?	?		+			
17.	Indivan	Indinavir	400mg capsule	180 caps/ bottle	Cipla	India	+	+			
18.	Dinosin-200	Didanosine	200mg tablet	60 tab /bottle	Hetero Drugs	India	+				
19.	Lopimune	Lopinavir/ Ritonavir	133.3mg/ 33.3mg capsule	180 caps/ bottle	Cipla	India	+				
		Ritonavir[3]	100mg	cap							
		Abacavir[3]	300mg	Tab							
		Nelfinavir Mesylate[3]	200mg, 250mg, 500mg, 625mg	cap or tab							
Pediatric Formulations											
20.	Triomune Baby	Stavudine/ Lamivudine/ Nevirapine	6mg/30mg/ 50mg dispersible tablet	60 tab /bottle	Cipla	India					
21.	Triomune Junior	Stavudine/ Lamivudine/ Nevirapine	12mg/60mg/ 100mg dispersible tablet	60 tab /bottle	Cipla	India					
22.	Lamivir	Lamivudine	10mg/1ml oral solution	100ml bottle	Cipla	India	+				

List of Antiretroviral Drugs – April 2007

National HIV/AIDS Secretariat, Sierra Leone

No.	Originator/ Generic Name	INN Name	Strength/ Form	Pack Size	Manufacturer	Country of Origin	Registered +/-	Included in NEML +/-	Funding Source (√)		
									Govt	GF	UNICEF
23.	Zidovir	Zidovudine	10 mg/ml oral solution	100ml bottle	Cipla	India	+				
24.	Nevimune	Nevirapine	50 mg/5ml oral suspension	100ml bottle	Cipla	India	+				
25.	Nevivir	Nevirapine	50 mg/5ml oral suspension	100ml bottle	Hetero Drugs	India	+				
		Efavirenz[3]	30mg/ml oral suspension								
		Didanosine[3]	25mg, 50mg, 100mg, 125mg	tab							
		Lopinavir/ Ritonavir[3]	80mg/20mg/ml oral suspension	300ml bottle							
		Nelfinavir[3]	50mg/g PFR (50mg/1.25ml scoop)								
		Abacavir[3]	20mg/ml oral solution	240ml bottle							

[1] NAS may want to consider cancelling all orders for d4T 40mg based drug formulations and replacing the quantities with d4T30mg formulations given the recent amendment to the WHO ART Guidelines of 2006.

[2] These are fixed-dose combination drug formulations of ARV drugs not currently registered, procured or in stock that, if selected, could facilitate patient adherence to prescribed regimens when there is a need for a single drug substitution of Nevirapine with Efavirenz within the existing 1st line regimen of d4T30/3TC/NVP currently supplied as a triple FDC formulation.

[3] While not currently registered and not in stock, these drugs would need to be procured and available in order to comply with all ARV drug regimens as recommended in the National Antiretroviral Treatment Guidelines as of August 2006.

Appendix G. List of ARV Drugs and HIV Test Kits

List of Approved HIV Test Kits – April 2007

National HIV/AIDS Secretariat, Sierra Leone

Type of Assay/ Assay Name	Manufacturer	No. Tests per Kit	Shelf Life*	Storage Temp (° C)*	
Simple/Rapid Assay					
Determine™ HIV-1/2	Abbott Diagnostics	100	18 months	2° - 30°	
SD Bioline HIV 1/2 3.0	Standard Diagnostics	20 30	24 months	1° - 30°	
Uni-Gold™ HIV-1/HIV-2	Trinity Biotech	20	15 months	2° - 27°	
Capillus™ HIV-1/HIV-2	Trinity Biotech	100	20 months	2° - 8°	
Randox		40			
ELISA Assays					
Vironostika® HIV Uni-Form II Ag/Ab	BioMérieux BV	192 576	12 months	2° - 8°	
Murex HIV Ag-Ab Combination	Abbott Diagnostics	96 480	***12 months?***	***2° - 8°?***	
Enzygnost® Anti-HIV 1/2 Plus	Dade Behring AG	192 (2 x 96) 960 (10 x 96)	12 months	2° - 8°	
Confirmatory Assays					
Consumables					
lancets					
cotton wool					
needles					
syringes					
vacutainers					
gloves					
chlorhexidine					

* Shelf Life and Storage Temperatures as of May 2006.

APPENDIX H. FACILITY LEVEL ASSESSMENT TOOL – HIV TEST KITS

HIV/AIDS Supply Chain Assessment

National HIV/AIDS Secretariat
Sierra Leone

Facility Level Assessment Tool

HIV Test Kits

April 2007
USAID | DELIVER PROJECT

Interviewer's Guide

I. Information about Interview	Record the date of the interview and list the names of the interviewers.
II. Facility Identification	Ask to speak to the person in-charge of the facility. Write the name of the facility and the location. Record the location, facility type, facility code and characteristics using the codes provided for each question. Write the code number of the responses in the boxes on the right.
III. Introduction	Use the text here to guide your introduction and explain the purpose of the assessment to facility staff. Request permission to conduct the interviews and record the information regarding the interviewee(s) titles and functions. For sections IV. through IX. of the questionnaire, record responses by clearly circling the number or letter that corresponds to the interviewee's response. Some questions may have more than one response, others require the interviewer to write the interviewees' responses.
IV. HIV Testing Services	Interview the Facililty In-Charge and other staff about the HIV testing services provided at the facility.
V. Data Collection and Reporting	Record interviewee's responses to the questions in this section
VI. Ordering	Record interviewee's responses to the questions in this section.
VII. Distribution/Transport	Record interviewee's responses to the questions in this section.
VIII. Supervision	Record interviewee's responses to the questions in this section.
IX. Storage Conditions/ Stockkeeping Practices/ Physical Inventory	**Table 1. Storage Conditions.** Record observations on storage conditions in the main storage area (even if it is a cabinet) by responding to Questions 1 - 12 on the storage conditions for each facility visited. For large storage areas that require stacking of multiple boxes, complete Questions 13-16. **Table 2. Stock Status**. Review the stock cards. Record the answers to each column in Table 2. To complete the table, follow the instructions for each column. If the information is not available from stock cards, LMIS reports or other facility records, and the interviewee does not know, mark DK as the response.
End Interview	Ask the interviewee/s if they want to ask any questions or offer any comments. Thank them for their time and for the information.
After the Interview	Interviewer to record any additional comments/observations and provide a brief analysis of findings from the facility visit.

I. Information about Interview

Date: _____

DAY/ MONTH/ YEAR

Interviewer/s: _____

_____

_____

_____

II. Facility Identification

Name of the facility: _____

Facility location:

Town/Village: _____

Chiefdom: _____

Province:_____

Province: ……. | |

01 = Western Area Urban
02 = Western Area Rural
03 = Northern Province
04 = Southern Province
05 = Eastern Province

District: _____

District: …….. | |

01 = Bombali
02 = Kambia
03 = Koinadugu
04 = Port Loko
05 = Tonkolili
06 = Kailahun
07 = Kenema
08 = Kono
09 = Bo
10 = Bonthe
11 = Moyamba
12 = Pujehun

Facility Type:

Facility Type:……..……. | |

01 = Central Warehouse/Storage Facility
02 = Central/Specialist Hospital;
03 = Provincial Govt Hospital;
04 = District Govt Hospital;
05 = Community Health Center
06 = Military Hospital
07 = Other _____

Operating Authority:

Operating Authority: …….. | |

01 = MOHS
02 = Local Authority
03 = Church Mission
04 = Uniformed Forces
05 = Private
06 = Other _____

Facility Characteristics:	
Accessible year round? (0 = NO; 1= YES)	Access:.....
Operational Electricity on day of visit? (0 = NO; 1 = YES)	Electricity: .....
Operational Water in the building on the day of visit? (0 = NO; 1 = YES)	Water:……..
Operational Telephone or Radio on day of visit? (0 = NO; 1 = YES)	Telephone/Radio Communication:.....

III. Introduction

Ask for the person in-charge of the facility and show the letter of introduction/authorization from the MOHS. Introduce all team members and ask facility representatives to introduce themselves.

Explain the objectives of the assessment and the purpose of the visit to the facility today:

Good day and thank you for agreeing to receive us today. My name is _____. My colleague(s) and I are representing the Ministry of Health and Sanitation of Sierra Leone. We are assisting the National HIV/AIDS Secretariat to conduct an assessment of the logistics system for managing ARV drugs and HIV test kits for the national program. We are visiting selected health facilities throughout the country and this facility was selected to be in included in the assessment. The purpose of the visit today is to assess the availability of ARV drugs and HIV tests at this facility, and to collect information about how you order, receive, store and record the use of these products in order to better understand how the logistics system for managing ARV drugs and HIV test kits is functioning. This is not a supervisory visit and the performance of individual staff members is not being evaluated.

The results of the assessment will provide information for developing recommendations and planning improvements in the logistics system for these products. This assessment may be conducted again in the future to measure changes in the logistics system over time.

We would first like to ask you about the HIV testing and the ART services provided at this facility. Then, with your permission, we would like to speak with staff members about how the HIV test kits and the ARV drugs are managed at this facility. In addition, we would like to visit the storage areas to actually count the products you have in stock today and observe the general storage conditions.

Ask the Facililty In-Charge and other staff members if they have any questions before proceeding with the interview questions.

Ask the Facility In-Charge to identify staff members who can answer questions about the ART Program and the HIV Testing services at the facility.

At this point the assessment team members should separate into two groups. One will interview facility staff responsible for management of ARV drugs and then visit the ARV drug storage area to observe storage conditions and assess stockkeeping practices, review stock cards and conduct the physical inventory. The other group will do the same with the staff responsible for management of HIV test kits at the facility and then visit the storage area for HIV test kits. The group that finishes first should join the other group to help with counting and documenting the results of the physical inventory.

No.	IV. HIV Testing Services	Code Classification	Go To
01.	Name and Title of person interviewed for this section	Name: _____ Title: _____	
02.	Number of years and months you have worked at this facility?	Years: _____ Months: _____	
03.	How long have HIV counseling and testing services been offered at this facility?	Years: _____ Months: _____	
04.	For what purposes is HIV testing being provided at this facility?	VCCT..... 1 PMTCT ..... 2 Laboratory/Clinical Diagnosis..... 3 Blood Safety ..... 4 Sentinel Surveillance..... 5 Other (specify)..... 6	
05.	Which cadres of staff are qualified to perform HIV tests at this facility?	Medical Officer ..... 1 CHO/Counselor ..... 2 Nurse/Counselor ..... 3 Social Worker/Counselor ..... 4 Laboratory Technician ..... 5 Other (specify)..... 6	
06.	Where is HIV testing being performed at this facility?	Laboratory ..... 1 ANC Clinic ..... 2 Counseling Room..... 3 STI Clinic ..... 4 TB Clinic ..... 5 Other (specify)..... 6 Testing conducted at another facility (specifiy) 7	

07. What is the HIV testing algorithm followed at this facility? *(if Other, please specify)*

Determine HIV-1/2 …… 01
SD Bioline HIV 1/2 3.0 …… 02
Uni-Gold HIV-1/HIV-2 …….. 03
Capillus HIV-1/HIV-2 …… 04
Vironostika HIV Uni-Form II Ag/Ab . 05
Murex HIV Ag-Ab Combination 06
Enzygnost Anti-HIV 1/2 Plus 07
Other: _____ 08
Other: _____ 09
Other: _____ 10
Other: _____ 11

Type of Test	Code No.	
Screening:		
Confirmatory:		
Tiebreaker:		

Don't Know: …….. DK

08. What is the total number of people that have been tested for HIV at this facility since you started providing this service?
And how many people were positive? *(by year)*
(interviewer to calculate HIV prevalence %)

Year	No. People Tested	No. Positive	%	Don't Know
2002				DK
2003				DK
2004				DK
2005				DK
2006				DK
Jan-Mar 2007				DK

09. What was the number of people tested by purpose of testing at this facility in 2006? *(by purpose of the test)*

Year 2006	No. Tested
VCCT	
PMTCT	
Lab Dx	
Blood Safety	
Sentinel Surveillance	

Don't Know: …….. DK

<table>
<tr><td>10.</td><td>Is the data on the total number of people tested and the number of positive HIV test results reported to a higher level?</td><td>Yes 1
No ..... 0</td><td>➔go to 12.</td></tr>
<tr><td>11.</td><td>How is this data reported? (ask to see a copy of the report)</td><td>Name of Report: _____
Other: _____</td><td></td></tr>
<tr><td>12.</td><td>Verify the data collected on the report.</td><td>Data Reported<table><tr><td>No. People Counseled</td><td>Yes……1
No……0</td></tr><tr><td>No. People Tested</td><td>Yes……1
No……0</td></tr><tr><td>No. Positive Results</td><td>Yes……1
No……0</td></tr><tr><td>No. Discordant Results</td><td>Yes……1
No……0</td></tr></table></td><td></td></tr>
<tr><td>13.</td><td>How often is this report submitted to the higher level?</td><td>Monthly 1
Quarterly 2
Semi-annually 3
Annually 4
Other..... 5
Don’t Know: …….. DK</td><td></td></tr>
<tr><td>14.</td><td>What are the program targets/estimated growth in number of people to be tested at this facility over the next four years?</td><td><table><tr><th>Year</th><th>Estimated No. People to be Tested</th><th>Don’t Know</th></tr><tr><td>2007</td><td></td><td>DK</td></tr><tr><td>2008</td><td></td><td>DK</td></tr><tr><td>2009</td><td></td><td>DK</td></tr><tr><td>2010</td><td></td><td>DK</td></tr></table></td><td></td></tr>
</table>

HIV TEST KITS

First ask to speak to staff member(s) responsible for performing HIV testing at the facility. After asking the questions in section V. Data Collection and Reporting, visit the warehouse, storeroom, laboratory or other storage area where the HIV test kits are stored. If you are referred to another staff member for the stocktaking exercise, explain the assessment objectives and purpose of the visit as you did during the introduction.

No.	V. Data Collection and Reporting	Code Classification	Go To/ Comments
15.	Which staff member(s) are performing HIV testing at this facility?	Medical Officer..... 1 CHO/Counselor ..... 2 Nurse/Counselor..... 3 Social Worker/Counselor ..... 4 Laboratory Technician ..... 5 Other (specify) 6	
16.	Name and Title of person interviewed for this section Number of years and months you have worked at this facility?	Name: _____ Title: _____ Years: _____ Months: _____	
17.	Name and Title of person interviewed for this section Number of years and months you have worked at this facility?	Name: _____ Title: _____ Years: _____ Months: _____	
18.	Which HIV test kits are used at this facility?	Determine HIV-1/2 …… 01 SD Bioline HIV 1/2 3.0 …… 02 Uni-Gold HIV-1/HIV-2 …….. 03 Capillus HIV-1/HIV-2 …… 04 Vironostika HIV Uni-Form II Ag/Ab . 05 Murex HIV Ag-Ab Combination ..... 06 Enzygnost Anti-HIV 1/2 Plus ..... 07 Other: _____ 08 Other: _____ 09 Other: _____ 10 Other: _____ 11	
19.	Where do you record information on the quantities of HIV tests used? (consumption)	VCT Daily Register…… 1 Laboratory Register …… 2 Stores Ledger …… 3 Stock Card …… 4 Other …….. 5 Not Recorded …… 6	➔ go to 26.

20.	Where do you record information on the quantities of HIV tests in stock? (stock on hand)	VCT Daily Register…… 1 Laboratory Register …… 2 Stores Ledger …… 3 Stock Card …… 4 Other ……... 5 Not Recorded …… 6	➔ go to 26.
	NOTE: If the person performing HIV tests is not responsible for compiling and submitting facility reports on consumption and stock levels of HIV tests, interviewer will need to ask to speak to the appropriate person to answer the following questions about reporting in this section.		
21.	Do you report on the quantities of HIV tests used (consumption) and the quantities of HIV tests in stock (stock on hand) to a higher level? *(If yes, interviewer note which level).*	Yes .....1 No 0	➔ go to 26.
22.	How is this data reported? *(ask to see a copy of the report).*	Name of Report: _____ Other: _____	
23.	Verify type of data collected.	Issues …… 1 Consumption …… 2 Stock on Hand…… 3 Losses/Adjustments…… 4 None of the above …… 5	
24.	How often is this report supposed to be submitted to the higher level?	Monthly ……..…… 1 Quarterly …….. …… 2 Semi-annually …… 3 Annually…… 4 Other ……... 5	
25.	When was the last time you submitted the report on consumption and stock levels of HIV test kits at this facility?	Never .....1 Within the last month .....2 2 months ago .....3 3 months ago .....4 More than 3 months ago 5	
26.	Do you receive reports on the quantities of HIV tests used (consumption) and the quantities of HIV tests in stock (stock on hand) from from lower level facilities?	Yes .....1 No 0	➔ go to 32.
27.	How many facilities are supposed to submit reports on HIV test kits to this facility?	|___|___|	
28.	How many of these facilities submitted their reports for the last reporting period (March 2007)?	No. of Facilities |___|___|	

29.	How did you learn to complete the forms for collecting and reporting data on the quantities of HIV tests used (consumption) and the quantities of HIV tests in stock (stock on hand)? *(Circle all that apply.)*	Never learned .....1 During a training workshop .....2 On-the-job training .....3 On-the-job (self-learning) .....4 Other (specify)_____ 5	

No.	VI. Ordering	Code Classification	Go To/ Comments
30.	Who prepares the orders for HIV test kits for this facility?	Medical Officer ..... 6 CHO/Counselor ..... 2 Nurse/Counselor ..... 3 Social Worker/Counselor ..... 4 Stores Manager ..... 5 Laboratory Technician ..... 6 Other (specify) ..... 7 Facility does not place orders……..8	➔go to 36.
31.	How often does the facility place orders for HIV test kits?	Weekly …… 1 Monthly ……..…… 2 Quarterly …….. …… 3 Semi-annually …… 4 Annually…… 5 Other …….. 6	
32.	How are the order quantities determined? *(ask interviewee to explain the formula used to arrive at the order quantity and note here)*	Formula .....1 Don't know .....2 Other means (specify) ……3	
33.	How did you learn to calculate the order quantity for HIV test kits?	Never learned .....1 During a training workshop .....2 On-the-job training .....3 On-the-job (self-learning) .....4 Other (specify) 5	
34.	Do you receive the quantities of HIV test kits that you order?	Always .....1 Sometimes .....2 Never 3	
35.	How many emergency orders for HIV test kits were placed in the last 6 months?	None .....0 1 .....1 2 .....2 3 .....3 More than 3.....4 DK.....5	
No.	**VII. Distribution/Transport**	**Code Classification**	**Go To/ Comments**
36.	Who is responsible for transporting HIV test kits to your facility? *(Circle all that apply.)*	Local supplier delivers .....1 Higher level delivers .....2 This facility collects .....3 Other (specify) 4	
37.	What type of transportation is most often used for HIV test kits?	Facility vehicle .....1 Public transportation .....2 Private vehicle .....3 Boat .....4 Motorcycle .....5 Bicycle .....6 On foot .....7 Other (specify) _____ 9	

38.	On average, approximately how long does it take from the time the facility places an order until the HIV test kits are received?	Less than 2 weeks.....1 2 weeks to 1 month .....2 Between 1 and 2 months .....3 More than 2 months 4	
No.	**VIII. Supervision**	**Code Classification**	**Go To/ Comments**
39.	When did you receive your most recent supervision visit for the HIV testing program? *Check visitors book, if necessary.*	Never received.....1 Within the last month .....2 Within the last 3 months .....3 Within the last 6 months .....4 More than 6 months ago .....5 Other (specify) _____ 9	
40.	Did your last supervision visit include management of the HIV test kit supply at this facility? (e.g., review of stock cards, reports, physical stock count, removal/ disposal of expired stock, storage conditions)?	Yes.....1 No 0	

Thank you for you time and information. You have been very helpful. Our remaining questions will require looking at products in the storeroom and speaking with the person who oversees the store.

If a different person is interviewed in the storeroom, introduce the team members and explain the purpose of the visit as before. If with the same person, go to Table 1: Storage Conditions.

No.	**IX. Storage Conditions/Stockkeeping Practices/Physical Inventory**	**Code Classification**	**Go To**
41.	Who is the person responsible for managing HIV test kits in this storeroom?	Medical Officer..... 1 Laboratory Technologist ..... 2 Laboratory Technician..... 3 Laboratory Assistant ..... 4 PMTCT Nurse ..... 5 VCCT Counselor ..... 6 Other (specify) 7	
42.	Name and title of person interviewed for this section.	Name: _____ Title: _____	
43.	Number of years and months you have worked at this facility.	Years: _____ Months: _____	

TABLE 1: Storage Conditions

Ask where the main storage area for HIV test kits is located: _____ and ask for permission to visit the storage area. Assess storage conditions of main storage area only. Place a check (tick) mark in the appropriate column based on visual inspection of the storage area; note any relevant observations in the comments column**. To qualify as "Yes," all products must meet the criteria for each item.**

No.	Description	Yes	No	NA	Comments
01.	HIV test kits are stored in a dry, well-lit, well-ventilated storeroom and out of direct sunlight. (visually inspect roof, walls, and floor of storeroom).				
02.	Storeroom is clean, all trash removed, no evidence of food and drinks, products stored on sturdy shelves/bins, boxes organized neatly.				
03.	There is no evidence of rodents or insects in the storage area. (visually inspect the storage area for evidence of rodents (droppings) or insects that can damage or contaminate the products).				
04.	HIV test kits are stored separately from office supplies, files, insecticides, flammable products and chemicals.				
05.	Outer cartons are in good condition (not crushed, perforated, stained or otherwise visibly damaged).				
06.	Products are arranged on shelving with arrows pointing up, and with identification labels, expiry dates and manufacturing dates clearly visible.				
07.	HIV test kits are stored and organized to facilitate first-to-expire, first-out (FEFO) procedures, and are accessible for counting, and general stock management.				
08.	Damaged and expired products are separated from usable products in the storeroom and procedures exist for removing them from inventory.				
09.	Products are stored at the appropriate temperature; according to product temperature specifications (8°- 30°C), including cold chain storage (2°- 8°C), as required.				
10.	Food and drinks are not stored together in refrigerator used for storing HIV test kits that require cold storage.				
11a.	Current storage space is sufficient for existing products.				
11b.	Current storage space is sufficient for program expansion.				
12.	Storage area is secured with a lock and key, but is accessible during normal working hours; access is limited to authorized personnel.				

The additional standards below can be applied to any storeroom large enough to require stacking of multiple boxes.

No.	Description	Yes	No	NA	Comments
13.	Products are stacked at least 10 cm off the floor (on pallets or other materials that elevate the products off the floor).				
14.	Products are stacked at least 30 cm away from the walls and other rows or stacks of products. (to prevent contact with outer walls and allow access to products)				
15.	Products are stacked no more than 2.5 meters high.				
16.	Fire safety equipment is available and accessible (any item identified as being used to promote fire safety should be considered).				

Additional guidelines for specific questions:

Item 5: Visually inspect outer cartons for damage (stained, crushed, perforated or otherwise damaged). Also, examine the condition of the products inside opened or damaged cartons.

Item 8: These practices may vary by facility. Specify if procedures for separating and removing damaged or expired products from inventory exist at the facility and note what they are. (e.g. are damaged and expired products returned to a higher level of the system or are they destroyed at the facility?)

Item 12: This may refer to a warehouse or storeroom secured with a locked door/gate or to a locked cabinet/drawer in a clinic.

Item 16: Fire safety equipment does not have to meet international standards. Consider any item identified as being used to promote fire safety (e.g., water bucket, sand). Do not consider empty and/or expired fire extinguishers as valid fire safety equipment.

TABLE 2. Stock Status for HIV Tests [October 2006 – March 2007 and Day of the Visit]

INSTRUCTIONS:

Column:

1. Name of each HIV testing product that will be counted
2. Unit of count for the product – HIV tests (not kits) (Note if smallest unit of count is not used on the stock cards.)
   Note*:* Columns 1 and 2 should be filled out before questionnaires are printed.
3. Whether or not the product is available, is this facility supposed to manage this product? Answer Y for Yes or N if No.
4. Check if the stock card is available for each product, answer Y for Yes or N for No. If another type of record is used, e.g. stores ledger, please note in column 4. If there are no stock cards, record N/A for Not Applicable in columns 5. through 12.
5. Check if the stock card has been updated within the last 30 days, answer Y for Yes or N for No. Note: If the balance was 0 the last time the stock card was updated and the facility has not received any re-supply of HIV test kits, consider the stock card up-to-date.
6. Record the balance on the stock card.
7. Record the number of months for which there is any data recorded on the stock cards, including 0.
8. Record if the facility has had any stockouts of the product during the last six complete months before the day of the visit, answer Y for Yes or N if No.
9. Record how many times the product stocked out during the last six complete months before the day of the visit according to the stock cards, if available. If not, note if information provided by confirmed by a key informant .
10. Record the total number of days the product was stocked out during the last six complete months before the day of the visit.
11. Reason/s for stockout. Note: For any product that experienced a stockout in the last six complete months and up to the day of the visit, please note reasons (by product) in the space provided at the bottom of the table.
12. Record the total quantity of HIV tests issued from the storeroom (from stock card), during the last six complete months before the day of the visit.
13. Record if the facility is experiencing a stockout of the product on the day of the visit, *according to the physical inventory*, answer Y for Yes or N if No.
14. Record the quantity of each HIV testing product in stock in the storeroom. Count the number of HIV tests remaining in any opened boxes.
15. Record the expiry dates for each product (one product may have several different expiry dates)
16. Record the total quantity to expire within 3 months of the day of the visit (for all products that will expire by June 30, 2007)
17. Count all expired products on the day of the visit. Record the total quantity expired of each product.
18. If a Maximum/Minimum Inventory Control System has been established, fill in the Maximum and Minimum Months of Stock and Order Interval in the spaces provided at the bottom of the table.

TABLE 2. Stock Status for HIV Tests [October 2006 – March 2007 and Day of the Visit]

Product	Unit of count	Managed at this facility? (Y/N)	Stock card available? (Y/N)	Stock card updated? (Y/N)	Balance on stock card	Number of months of data available on stock card	Stockout most recent 6 months? (Y/N)	Number of stockouts (most recent 6 months)	Total number of days of stock out(s)	Reason for stockout. (List reason/s below)*	Total issued from storeroom (most recent 6 months)	Stock out today? (YN)	Physical inventory (in store room)	Expiry dates	Total quantity to expire within 3 months (by June 30, 2007)	Total quantity expired
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Simple/ RapidAssay																
Determine™ HIV-1/2 100 tests/kit	Test															
SD Bioline HIV 1/2 3.0 30 tests/kit	Test															
Uni-Gold™ HIV-1/HIV-2 20 tests/kit	Test															
Capillus™ HIV-1/HIV-2 100 tests/kit																

Product	Unit of count	Managed at this facility? (Y/N)	Stock card available? (Y/N)	Stock card updated? (Y/N)	Balance on stock card	Number of months of data available on stock card	Stockout most recent 6 months? (Y/N)	Number of stockouts (most recent 6 months)	Total number of days of stock out(s)	Reason for stockout. (List reason/s below)*	Total issued from storeroom (most recent 6 months)	Stock out today? (YN)	Physical inventory (in store room)	Expiry dates	Total quantity to expire within 3 months (by June 30, 2007)	Total quantity expired
ELISA Assay																
Vironostika® HIV Uni-Form II Ag/Ab 96 tests/kit	Test															
Murex HIV Ag-Ab Combination ?? tests/kit	Test															
Enzygnost® Anti-HIV 1/2 Plus 96 tests/kit	Test															

18. Maximum Months of Stock_____Minimum Months of Stock_____ Order Interval_____

Comments:

Product	Unit of count	Managed at this facility? (Y/N)	Stock card available? (Y/N)	Stock card updated? (Y/N)	Balance on stock card	Number of months of data available on stock card	Stockout most recent 6 months? (Y/N)	Number of stockouts (most recent 6 months)	Total number of days of stock out(s)	Reason for stockout. (List reason/s below)*	Total issued from storeroom (most recent 6 months)	Stock out today? (YN)	Physical inventory (in store room)	Expiry dates	Total quantity to expire within 3 months (by June 30, 2007)	Total quantity expired

***11. Reason/s for Stockout:**

Product:_____ Explanation:_____

Product_____ Explanation:_____

Product:_____ Explanation:_____

Product_____ Explanation:_____

Product:_____ Explanation:_____

Ask the person/people interviewed if they have any questions or would like to make any comments.

Interviewee Comments:

Thank the person/people interviewed for their time and their contribution to helping the program achieve its objectives. Assure them that the results of the assessment will be used to develop improvements in logistics system performance.

Additional Interviewer Comments:

Brief Analysis of Findings from the Facility Visit:

APPENDIX I. FACILITY LEVEL ASSESSMENT TOOL – ARV DRUGS

HIV/AIDS Supply Chain Assessment

National HIV/AIDS Secretariat
Sierra Leone

Facility Level Assessment Tool

ARV Drugs

April 2007
USAID | DELIVER PROJECT

Interviewer's Guide

I. Information about Interview	Record the date of the interview and list the names of the interviewers.
II. Facility Identification	Ask to speak to the person in-charge of the facility. Write the name of the facility and the location. Record the location, facility type, facility code and characteristics using the codes provided for each question. Write the code number of the responses in the boxes on the right.
III. Introduction	Use the text here to guide your introduction and explain the purpose of the assessment to facility staff. Request permission to conduct the interviews and record the information regarding the interviewee(s) titles and functions. For sections IV. through IX. of the questionnaire, record responses by clearly circling the number or letter that corresponds to the interviewee's response. Some questions may have more than one response, others require the interviewer to write the interviewees' responses.
IV. ART Services	Interview the Facililty In-Charge and other staff about the ART services provided at the facility.
V. Data Collection and Reporting	Record interviewee's responses to the questions in this section
VI. Ordering	Record interviewee's responses to the questions in this section.
VII. Distribution/Transport	Record interviewee's responses to the questions in this section.
VIII. Supervision	Record interviewee's responses to the questions in this section.
IX. Storage Conditions/ Stockkeeping Practices/ Physical Inventory	**Table 1. Storage Conditions.** Record observations on storage conditions in the main storage area (even if it is a cabinet) by responding to Questions 1 - 12 on the storage conditions for each facility visited. For large storage areas that require stacking of multiple boxes, complete Questions 13-16. **Table 2. Stock Status**. Review the stock cards. Record the answers to each column in Table 2. To complete the table, follow the instructions for each column. If the information is not available from stock cards, LMIS reports or other facility records, and the interviewee does not know, mark DK as the response.
End Interview	Ask the interviewee/s if they want to ask any questions or offer any comments. Thank them for their time and for the information.
After the Interview	Interviewer to record any additional comments/observations and provide a brief analysis of findings from the facility visit.

I. Information about Interview

Date: _____

DAY/ MONTH/ YEAR

Interviewer/s: _____

_____

_____

_____

II. Facility Identification

Name of the facility: _____

Facility location:

Town/Village: _____

Chiefdom: _____

Province:_____

Province: …… | |

01 = Western Area Urban
02 = Western Area Rural
03 = Northern Province
04 = Southern Province
05 = Eastern Province

District: _____

District: …….. | |

01 = Bombali
02 = Kambia
03 = Koinadugu
04 = Port Loko
05 = Tonkolili
06 = Kailahun
07 = Kenema
08 = Kono
09 = Bo
10 = Bonthe
11 = Moyamba
12 = Pujehun

Facility Type:

Facility Type:……..…… | |

01 = Central Warehouse/Storage Facility
02 = Central/Specialist Hospital;
03 = Provincial Govt Hospital;
04 = District Govt Hospital;
05 = Community Health Center
06 = Military Hospital
07 = Other _____

Operating Authority:

Operating Authority: …….. | |

01 = MOHS
02 = Local Authority
03 = Church Mission
04 = Uniformed Forces
05 = Private
06 = Other _____

Facility Characteristics:	
Accessible year around? (0 = NO; 1= YES)	Access:.....
Operational Electricity on day of visit? (0 = NO; 1 = YES)	Electricity:.....
Operational Water in the building on the day of visit? (0 = NO; 1 = YES)	Water:……..
Operational Telephone or Radio on day of visit? (0 = NO; 1 = YES)	Telephone/Radio Communication:.....

III. Introduction

Ask for the person in-charge of the facility and show the letter of introduction/authorization from the MOHS. Introduce all team members and ask facility representatives to introduce themselves.

Explain the objectives of the assessment and the purpose of the visit to the facility today:

Good day and thank you for agreeing to receive us today. My name is _____. My colleague(s) and I are representing the Ministry of Health and Sanitation of Sierra Leone. We are assisting the National HIV/AIDS Secretariat to conduct an assessment of the logistics system for managing ARV drugs and HIV test kits for the national program. We are visiting selected health facilities throughout the country and this facility was selected to be in included in the assessment. The purpose of the visit today is to assess the availability of ARV drugs and HIV tests at this facility, and to collect information about how you order, receive, store and record the use of these products in order to better understand how the logistics system for managing ARV drugs and HIV test kits is functioning. This is not a supervisory visit and the performance of individual staff members is not being evaluated.

The results of the assessment will provide information for developing recommendations and planning improvements in the logistics system for these products. This assessment may be conducted again in the future to measure changes in the logistics system over time.

We would first like to ask you about the HIV testing and the ART services provided at this facility. Then, with your permission, we would like to speak with staff members about how the HIV test kits and the ARV drugs are managed at this facility. In addition, we would like to visit the storage areas to actually count the products you have in stock today and observe the general storage conditions.

Ask the Facililty In-Charge and other staff members if they have any questions before proceeding with the interview questions.

Ask the Facility In-Charge to identify staff members who can answer questions about the ART Program and the HIV Testing services at the facility.

At this point the assessment team members should separate into two groups. One will interview facility staff responsible for management of ARV drugs and then visit the ARV drug storage area to observe storage conditions and assess stockkeeping practices, review stock cards and conduct the physical inventory. The other group will do the same with the staff responsible for management of HIV test kits at the facility and then visit the storage area for HIV test kits. The group that finishes first should join the other group to help with counting and documenting the results of the physical inventory.

No.	IV. ART Services	Code Classification	Go To
01.	Name and Title of person interviewed for this section	Name: _____ Title: _____	
02.	Number of years and months you have worked at this facility?	Years: _____ Months: _____	
03.	How long have ART services been offered at this facility?	Years: _____ Months: _____	
04.	What is the total number of patients on ART at this facility? *(as of March 31, 2007)*	Total No. Patients on ART as of March 31, 2007 = _____	
05.	Is there a waiting list of patients eligible for ART that have not been able to start treatment at this facility?	Yes……1 No……..0	➔go to 07.
06.	How many patients eligible for ART are on the waiting list to start ART as of March 31, 2007?	No. Patients on Waiting List = _____	
07.	What are the ARV drug regimens currently being used at this facility? *(ask if there is a document that lists all the different ARV drug regimens that we could collect this data from if needed)*	*Enter responses on table in Ques No. 09.*	
08.	What is the number of patients on each ARV drug regimen as of March 31, 2007? *(ask if there is a report or a document that we could collect the data from)*	*Enter responses on table in Ques. No. 09.*	

09.

1	Adult 1st Line Regimens	No. Pts.
1a	AZT/3TC+ NVP	
1b	AZT/3TC + EFV	
1c	$d4T_{30}$/3TC/NVP	
1d	$d4T_{40}$/3TC/NVP	
1e	$d4T_{30}$ +3TC+EFV	
1f	$d4T_{40}$ +3TC+EFV	
	Alternate 1st Line Regimens	
1g	AZT/3TC/ABC	
1h		
DK	Don't Know……	

2	Adult 2nd Line Regimens	No. Pts.
2a	AZT + ddI + LPV/r	
2b	AZT + ddI + IDV	
2c		
2d		
2e		
2f		
	Alternate 2nd Line Regimens	
2g		
2h		
DK	Don't Know……	

3	Pediatric 1st Line Regimens	No. Pts.
3a	AZT+3TC+ NVP	
3b	AZT+3TC + EFV	
3c	d4T/3TC/NVP	
3d	d4T/3TC/NVP	
3e	d4T +3TC+EFV	
3f		
	Alternate 1st Line Regimens	
3g		
3h		
DK	Don't Know……	

4	Pediatric 2nd Line Regimens	No. Pts.
4a		
4b		
4c		
4d		
4e		
4f		
	Alternate 2nd Line Regimens	
4g		
4h		
DK	Don't Know……	

5	PMTCT Regimens	No. Pts.
	Mother	
5a	NVP 200mg	
5b	AZT 300mg	
5c	AZT/3TC 300/150	
5d		
	Infant	
5e	NVP syrup	
5f	AZT + 3TC syrup	
DK	Don't Know……	

6	PEP Regimens	No. Pts.
	High Risk Exposure	
6a	AZT+3TC+ IDV or EFV or NFV	
6b	d4T 30/40 +3TC+IDV or EFV or NFV	
6c		
	Low Risk Exposure	
6d	AZT+3TC (28 days)	
6e	d4T30/40 +3TC (28 days)	
6f		
DK	Don't Know……	

7	HIV/TB Regimens	No. Pts.
7a	AZT/3TC + EFV 600mg	
7b	$d4T_{30}$ +3TC+EFV 600mg	
7c	$d4T_{40}$ +3TC+EFV 600mg	
7d		
DK	Don't Know……	

8	Other Regimens	No. Pts.
8a		
8b		
8c		
8d		
8e		
DK	Don't Know……	

<table>
<tr><td>10.</td><td>What is the total number of ARV drug regimens being prescribed at this facility? (add the total number of regimens from the tables in Question No. 09. above).</td><td>Total No. ARV drug regimens = _____</td><td></td></tr>
<tr><td>11.</td><td>Is the data on the total number of patients on ART reported to a higher level?</td><td>Yes 1
No ..... 0</td><td>➔go to 15.</td></tr>
<tr><td>12.</td><td>How is this data reported? (ask to see a copy of the report)</td><td>Name of Report: _____</td><td></td></tr>
<tr><td>13.</td><td>Verify the data collected on the report.</td><td>Data Reported<table><tr><td>Total No. Patients on ART at facility:</td><td>Yes……1
No……0</td></tr><tr><td>No. Patients on each ARV drug regimen:</td><td>Yes……1
No……0</td></tr></table></td><td></td></tr>
<tr><td>14.</td><td>How often is this report submitted to the higher level?</td><td>Monthly 1
Quarterly 2
Semi-annually 3
Annually 4
Other ..... 5</td><td></td></tr>
<tr><td>15.</td><td>What has been the growth in number of patients on ART since 2005? 2006? 2007 as of March 31.</td><td><table><tr><th>Year</th><th>No. Patients on ART</th><th>Don’t Know</th></tr><tr><td>2005</td><td></td><td>DK</td></tr><tr><td>2006</td><td></td><td>DK</td></tr><tr><td>2007</td><td></td><td>DK</td></tr></table></td><td></td></tr>
<tr><td>16.</td><td>Ask the Facility In-Charge to identify the staff member(s) responsible for dispensing the ARV drugs at this facility.</td><td>Medical Officer 1
Clinical Officer 2
Pharmacist 3
Pharmacy Technician/Dispenser ... 4
CHO-Counselor 5
Nurse-Counselor 6
Social Work-Counselor 7
Other (specify) ..... 8</td><td></td></tr>
</table>

ARV DRUGS

First ask to speak to staff member(s) responsible for dispensing the ARV drugs at this facility. After asking the questions in section V. Data Collection and Reporting, visit the warehouse, storeroom, laboratory or other storage area where the ARV drugs are stored. If you are referred to another staff member for the stocktaking exercise, explain the assessment objectives and purpose of the visit as you did during the introduction.

No.	V. Data Collection and Reporting	Code Classification	Go To/ Comments
17.	Name and Title of person interviewed for this section	Name: _____ Title: _____	
	Number of years and months you have worked at this facility?	Years: _____ Months: _____	
18.	Name and Title of person interviewed for this section	Name: _____ Title: _____	
	Number of years and months you have worked at this facility?	Years: _____ Months: _____	
19.	Which ARV drugs are used at this facility? *(circle the code number for each ARV drug)* .	Triomune 30 01 Triomune 40 02 Duovir 03 Duovir-N 04 Nevirapine 200mg 05 Lamivudine 150mg tab 06 Efavirenz 200mg 07 Efavirenz 600mg 08 Zidovudine 300mg 09 Stavudine 30 mg 10 Stavudine 40 mg 11 Lopinavir/ritonavir 133.33/33.3mg 12 Indinavir 400mg 13 Didanosine 200mg 14 Other: _____ 15 Other: _____ 16 Other: _____ 17	
20.	Where do you record information on the quantities of ARV drugs dispensed? (consumption)	Daily ART Register ……..… 1 Patient Record…… 2 Laboratory Register …… 3 Stores Ledger …… 4 Stock Card …… 5 Other ……... 6 Not Recorded …… 7	➔ go to 27.
21.	Where do you record information on the quantities of ARV drugs in stock? (stock on hand)	Daily ART Register ..…… 1 Laboratory Register …… 2 Stores Ledger …… 3 Stock Card …… 4 Other ……... 5 Not Recorded …… 6	➔ go to 27.

	NOTE: If the person dispensing ARV drugs is not responsible for compiling and submitting facility reports on consumption and stock levels of ARV drugs, interviewer will need to ask to speak to the appropriate person to answer the following questions about reporting in this section.		
22.	Do you report the quantities of ARV drugs dispensed (consumption) and quantities in stock (stock on hand) to a higher level? *(If yes, interviewer note which level).*	Yes ..... 1 No 0	➔ go to 31.
23.	How is this data reported? *(ask to see a copy of the report).*	Name of Report: _____ Other: _____	
24.	Verify type of data collected.	Issues …… 1 Consumption …… 2 Stock on Hand…… 3 Losses/Adjustments…… 4 None of the above …… 5	
25.	How often is this report supposed to be submitted to the higher level?	Monthly ……..…… 1 Quarterly …….. …… 2 Semi-annually …… 3 Annually…… 4 Other ……... 5	
26.	When was the last time you submitted the report on consumption and stock on hand of ARV drugs at this facility?	Never .....1 Within the last month .....2 2 months ago .....3 3 months ago .....4 More than 3 months ago 5	
27.	Do you receive reports on the quantities of ARV drugs dispensed (consumption) and quantities in stock (stock on hand) from lower level facilities?	Yes .....1 No 0	➔ go to 31.
28.	How many lower level facilities are supposed to submit reports to this facility?	|___|___|	
29.	How many of these facilities submitted their reports for the last reporting period (March 2007)?	No.of Facilities |___|___|	
30.	How did you learn to complete the forms for reporting data on the quantities of ARV drugs dispensed (consumption) and quantities in stock (stock on hand)? *(Circle all that apply.)*	Never learned .....1 During a training workshop .....2 On-the-job training .....3 On-the-job (self-learning) .....4 Other (specify) _____ 5	

No.	VI. Ordering	Code Classification	Go To/ Comments
31.	Who prepares the orders for ARV drugs for this facility?	Medical Officer..... 1 Clinical Officer ..... 2 Nurse……3 Pharmacist..... 4 Pharmacy Assistant ..... 5 Storekeeper ……..6 Other (specify) ..... .7 Facility does not place orders……..8	➔go to 37.
32.	How often does the facility place orders for ARV drugs?	Weekly …… 1 Monthly ……..…… 2 Quarterly …….. …… 3 Semi-annually …… 4 Annually…… 5 Other …….. 6	
33.	How are the order quantities determined? *(ask interviewee to explain the formula used to arrive at the order quantity and note here)*	Formula .....1 Don't know .....2 Other means (specify) ……3	
34.	How did you learn to calculate the order quantity for ARV drugs?	Never learned .....1 During a training workshop .....2 On-the-job training .....3 On-the-job (self-learning) .....4 Other (specify) 5	
35.	Do you receive the quantities of ARV drugs that you order?	Always .....1 Sometimes .....2 Never 3	
36.	How many emergency orders for ARV drugs were placed in the last 6 months?	None .....0 1.....1 2.....2 3.....3 More than 3.....4 DK.....5	

No.	VII. Distribution/Transport	Code Classification	Go To/ Comments
37.	Who is responsible for transporting ARV drugs to your facility? *(Circle all that apply.)*	Local supplier delivers .....1 Higher level delivers .....2 This facility collects .....3 Other (specify) 4	
38.	What type of transportation is most often used for ARV drugs?	Facility vehicle .....1 Public transportation .....2 Private vehicle .....3 Boat .....4 Motorcycle .....5 Bicycle .....6 On foot .....7 Other (specify) _____ 9	

39.	On average, approximately how long does it take from the time the facility places an order until the ARV drugs are received?	Less than 2 weeks.....1 2 weeks to 1 month .....2 Between 1 and 2 months .....3 More than 2 months 4	
No.	**VIII. Supervision**	**Code Classification**	**Go To/ Comments**
40.	When did you receive your most recent supervision visit for the ART program? *Check visitors book, if necessary.*	Never received.....1 Within the last month .....2 Within the last 3 months .....3 Within the last 6 months .....4 More than 6 months ago .....5 Other (specify) _____ 9	
41.	Did your last supervision visit include management of the ARV drug supply at this facility? (e.g., review of stock cards, reports, physical stock count, removal/disposal of expired stock, storage conditions)?	Yes.....1 No 0	

Thank you for you time and information. You have been very helpful. Our remaining questions will require looking at products in the storeroom and speaking with the person who oversees the store.

If a different person is interviewed in the storeroom, introduce the team members and explain the purpose of the visit as before. If with the same person, go to Table 1: Storage Conditions.

No.	**IX. Storage Conditions/Stockkeeping Practices/Physical Inventory**	**Code Classification**	**Go To**
42.	Who is the person responsible for managing ARV drugs in this storeroom?	Medical Officer..... 1 Nurse..... 2 Pharmacy Technician ..... 3 Pharmacy Assistant ..... 4 Pharmacy Technician/Dispenser ..... 5 Counselor ..... 6 Storekeeper …… 7 Other (Specify)……..…….8	
43.	Name and title of person interviewed for this section.	Name: _____ Title: _____	
44.	Number of years and months you have worked at this facility.	Years: _____ Months: _____	

TABLE 1: Storage Conditions

Ask where the main storage area for ARV drugs is located: _____ and ask for permission to visit the storage area. Assess storage conditions of main storage area only. Place a check (tick) mark in the appropriate column based on visual inspection of the storage area; note any relevant observations in the comments column**. To qualify as "Yes," all products must meet the criteria for each item.**

No.	Description	Yes	No	NA	Comments
01.	ARV drugs are stored in a dry, well-lit, well-ventilated storeroom and out of direct sunlight. (visually inspect roof, walls, and floor of storeroom).				
02.	Storeroom is clean, all trash removed, no evidence of food and drinks, products stored on sturdy shelves/bins, boxes organized neatly.				
03.	There is no evidence of rodents or insects in the storage area. (visually inspect the storage area for evidence of rodents (droppings) or insects that can damage or contaminate the products).				
04.	ARV drugs are stored separately from office supplies, files, insecticides, flammable products and chemicals.				
05.	Outer cartons are in good condition (not crushed, perforated, stained or otherwise visibly damaged).				
06.	Products are arranged on shelving with arrows pointing up, and with identification labels, expiry dates and manufacturing dates clearly visible.				
07.	ARV drugs are stored and organized to facilitate first-to-expire, first-out (FEFO) procedures, and are accessible for counting, and general stock management.				
08.	Damaged and expired products are separated from usable products in the storeroom and procedures exist for removing them from inventory.				
09.	Products are stored at the appropriate temperature; according to product temperature specifications (8°- 30°C), including cold chain storage (2°- 8°C), as required.				
10.	Food and drinks are not stored together in refrigerator used for storing ARV drugs that require cold storage.				
11a.	Current storage space is sufficient for existing products.				
11b.	Current storage space is sufficient for program expansion.				
12.	Storage area is secured with a lock and key, but is accessible during normal working hours; access is limited to authorized personnel.				

The additional standards below can be applied to any storeroom large enough to require stacking of multiple boxes.

No.	Description	Yes	No	NA	Comments
13.	Products are stacked at least 10 cm off the floor (on pallets or other materials that elevate the products off the floor).				
14.	Products are stacked at least 30 cm away from the walls and other rows or stacks of products. (to prevent contact with outer walls and allow access to products)				
15.	Products are stacked no more than 2.5 meters high.				
16.	Fire safety equipment is available and accessible (any item identified as being used to promote fire safety should be considered).				

Additional guidelines for specific questions:

Item 5: Visually inspect outer cartons for damage (stained, crushed, perforated or otherwise damaged). Also, examine the condition of the products inside opened or damaged cartons.

Item 8: These practices may vary by facility. Specify if procedures for separating and removing damaged or expired products from inventory exist at the facility and note what they are. (e.g. are damaged and expired products returned to a higher level of the system or are they destroyed at the facility?)

Item 12: This may refer to a warehouse or storeroom secured with a locked door/gate or to a locked cabinet/drawer in a clinic.

Item 16: Fire safety equipment does not have to meet international standards. Consider any item identified as being used to promote fire safety (e.g., water bucket, sand). Do not consider empty and/or expired fire extinguishers as valid fire safety equipment.

TABLE 2. Stock Status for ARV Drugs [October 2006 – March 2007 and Day of the Visit]

INSTRUCTIONS:

Column:

1. Name of each ARV drug that will be counted
2. Unit of count for the product – bottles of tablets; capsules; bottle of oral solution, suspension or syrup; sachets of powder for reconstitution.
   Note*:* Columns 1 and 2 should be filled out before questionnaires are printed.
3. Whether or not the product is available, is this facility supposed to manage this product? Answer Y for Yes or N if No.
4. Check if the stock card is available for each product, answer Y for Yes or N for No. If another type of record is used e.g. stores ledger, please note in column 4.
   If there are no stock cards, record NA for not applicable in columns 5 through 12.
5. Check if the stock card has been updated within the last 30 days, answer Y for Yes or N for No. Note: If the balance was 0 the last time the stock card was updated and the facility has not received any re-supply of ARV drugs, consider the stock card up-to-date.
6. Record the balance on the stock card.
7. Record the number of months for which there is any data recorded on the stock cards, including 0.
8. Record if the facility has had any stockouts of the product during the last six complete months before the day of the visit, answer Y for Yes or N if No.
9. Record how many times the product stocked out during the last six complete months before the day of the visit according to the stock cards, if available. If not, note if information provided by key informant.
10. Record the total number of days the product was stocked out during the last six complete months before the day of the visit.
11. Reason/s for stockout. Note: For any product that experienced a stockout in the last six complete months and up to the day of the visit, please note reasons (by product) in the space provided at the bottom of the table.
12. Record the total quantity of ARV drugs issued from the storeroom (from stock card), during the last six complete months before the day of the visit.
13. Record if the facility is experiencing a stockout of the product on the day of the visit, *according to the physical inventory*, answer Y for Yes or N if No.
14. Record the quantity of each ARV drug in stock in the storeroom. Count the number of ARV drugs remaining in any opened boxes or bottles. For liquid formulations estimate the amount remaining in the bottle (1/4 or ½, etc.).
15. Record the expiry dates for each product (one product may have several different expiry dates)
16. Record the total quantity to expire within 6 months of the day of the visit (for all products that will expire by September 30, 2007)
17. Count all expired products on the day of the visit. Record the total quantity expired of each product.
18. If a Maximum/Minimum Inventory Control System has been established, fill in the Maximum and Minimum Months of Stock and Order Interval in the spaces provided at the bottom of the table.

TABLE 2. Stock Status for ARV Drugs [October 2006 – March 2007 and Day of the Visit]

Product	Unit of count	Managed at this facility? (Y/N)	Stock card available? (Y/N)	Stock card updated? (Y/N)	Balance on stock card	Number of months of data available on stock card	Stockout most recent 6 months? (Y/N)	Number of stockouts (most recent 6 months)	Total number of days of stock out(s)	Reason for stockout. (List reason/s below)*	Total issued from storeroom (most recent 6 months)	Stock out today? (YN)	Physical inventory (in store room)	Expiry dates	Total quantity to expire within 6 months (by Sept 30, 2007)	Total quantity expired
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1st Line ADULTS																
AZT/3TC Duovir	Bottle/ 60 tabs															
AZT/3TC/NVP Duovir- N	Bottle/ 60 tabs															
d4T$_{30}$/3TC/NVP Triomune 30	Bottle/ 60 Tabs															
d4T$_{40}$/3TC/NVP Triomune 40	Bottle/ 60 tabs															

Product	Unit of count	Managed at this facility? (Y/N)	Stock card available? (Y/N)	Stock card updated? (Y/N)	Balance on stock card	Number of months of data available on stock card	Stockout most recent 6 months? (Y/N)	Number of stockouts (most recent 6 months)	Total number of days of stock out(s)	Reason for stockout. (List reason/s below)*	Total issued from storeroom (most recent 6 months)	Stock out today? (YN)	Physical inventory (in store room)	Expiry dates	Total quantity to expire within 6 months (by Sept 30, 2007)	Total quantity expired
AZT 300mg (Zidovudine)	Bottle 60 tab															
3TC 150mg (Lamivudine)	Bottle 60 tabs															
d4T 30 mg (Stavudine)	Bottle 60 tabs															
d4T 40 mg (Stavudine)	Bottle 60 tabs															
NVP 200mg (Nevirapine)	Bottle 60 tabs															
Efavirenz 200mg	Bottle/ 90 caps															

Product	Unit of count	Managed at this facility? (Y/N)	Stock card available? (Y/N)	Stock card updated? (Y/N)	Balance on stock card	Number of months of data available on stock card	Stockout most recent 6 months? (Y/N)	Number of stockouts (most recent 6 months)	Total number of days of stock out(s)	Reason for stockout. (List reason/s below)*	Total issued from storeroom (most recent 6 months)	Stock out today? (YN)	Physical inventory (in store room)	Expiry dates	Total quantity to expire within 6 months (by Sept 30, 2007)	Total quantity expired
Efavirenz 600mg	Bottle/ 30 tabs															
AZT/3TC/ABC Trizivir	Bottle/ 60 tabs															
2nd Line ADULTS																
ddI 200 mg Didanosine	Bottle/ 60 caps															
Lopinavir/ritonavir 133.3mg/33.3mg Kaletra	Bottle/ 90 caps															
Indinavir 400mg	Bottle/															

Product	Unit of count	Managed at this facility? (Y/N)	Stock card available? (Y/N)	Stock card updated? (Y/N)	Balance on stock card	Number of months of data available on stock card	Stockout most recent 6 months? (Y/N)	Number of stockouts (most recent 6 months)	Total number of days of stock out(s)	Reason for stockout. (List reason/s below)*	Total issued from storeroom (most recent 6 months)	Stock out today? (YN)	Physical inventory (in store room)	Expiry dates	Total quantity to expire within 6 months (by Sept 30, 2007)	Total quantity expired
	60 caps															
Pediatric 1st Line																
d4T/3TC/NVP Triomune Baby	Bottle ??mg/ml															
d4T/3TC/NVP Triomune Junior	Bottle ??mg/ml															
Zidovudine 10mg/ml (Brand ??)	Bottle 10mg/ml syrup															
Lamivudine 10mg/ml (Brand ???)	Bottle 10mg/ml 240 ml															

Product	Unit of count	Managed at this facility? (Y/N)	Stock card available? (Y/N)	Stock card updated? (Y/N)	Balance on stock card	Number of months of data available on stock card	Stockout most recent 6 months? (Y/N)	Number of stockouts (most recent 6 months)	Total number of days of stock out(s)	Reason for stockout. (List reason/s below)*	Total issued from storeroom (most recent 6 months)	Stock out today? (YN)	Physical inventory (in store room)	Expiry dates	Total quantity to expire within 6 months (by Sept 30, 2007)	Total quantity expired
	Oral solution															
Nevirapine 10mg/ml	Bottle 100 ml Oral suspension															
Efavirenz ??mg	Bottle															
Pediatric 2nd Line																
ddI Didanosine	Bottle															
LPV/r Kaletra	Bottle ??mg/ml															

Product	Unit of count	Managed at this facility? (Y/N)	Stock card available? (Y/N)	Stock card updated? (Y/N)	Balance on stock card	Number of months of data available on stock card	Stockout most recent 6 months? (Y/N)	Number of stockouts (most recent 6 months)	Total number of days of stock out(s)	Reason for stockout. (List reason/s below)*	Total issued from storeroom (most recent 6 months)	Stock out today? (YN)	Physical inventory (in store room)	Expiry dates	Total quantity to expire within 6 months (by Sept 30, 2007)	Total quantity expired
NFV Nelfinavir	Bottle															
18.	Maximum Months of Stock_____Minimum Months of Stock_____ Order Interval_____															

Comments:

*** 11. Reason/s for Stockout:**

Product:_____ Explanation:_____

Product_____ Explanation:_____

Product:_____ Explanation:_____

Product_____ Explanation:_____

Product:_____ Explanation:_____

Ask the person/people interviewed if they have any questions or would like to make any comments.

Interviewee Comments:

Thank the person/people interviewed for their time and their contribution to helping the program achieve its objectives. Assure them that the results of the assessment will be used to develop improvements in logistics system performance.

Additional Interviewer Comments:

Brief Analysis of Findings from the Facility Visit:

APPENDIX J. STAKEHOLDER DEBRIEFING

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HIV/AIDS Supply Chain Assessment

Preliminary Findings and Recommendations

Stakeholder Debriefing

National HIV/AIDS Secretariat
Sierra Leone

19th April 2007

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Background

- USAID|DELIVER PROJECT provides technical assistance in supply chain management of health commodities
- The PROJECT has provided technical assistance in supply chain management of contraceptives in Sierra Leone since February 2006.
- USAID|West Africa agreed to fund technical assistance to National HIV/AIDS Secretariat to strengthen supply chain management of HIV/AIDS commodities

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Acknowledgements

- Outstanding level of support and collaboration from Acting Director of NAS:
  - cost-sharing for transport, administrative support, meeting rooms, and human resources made available for assessment activities
- Full participation and effort of individual team members
- Level of commitment of providers to expand program and ensure quality of care

Technical Scope of Work

- Conduct assessment of current supply chains for managing ARV drugs and HIV test kits
- Identify areas for strengthening supply chain management of ARV drugs and HIV test kits
- Provide recommendations for strengthening supply chain management of ARV drugs and HIV tests

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Assessment Tools

- Developed draft assessment tools
- Tools adapted to Sierra Leone
- Trained field assessment teams
- Pilot tested assessment tools

Assessment Methodology

- Central level assessment tool to guide series of interviews with key stakeholders and partners
  - Policymakers, program managers, donors, procurement agents, warehouse managers, information managers
- Facility level assessment tool to guide interviews with service providers and data collection
  - implementation of ART and HIV testing services
  - monitoring and management of ARV drug and HIV test kit consumption and stock levels at each level

Supply Chain Areas Assessed

- Policy and regulatory guidelines for selection, registration and use of ARV drugs and HIV tests
- Capacity and methodologies for forecasting and quantification of commodity needs
- Funding sources and commitments for commodity procurement
- Procurement planning
- Inventory management procedures, distribution systems and storage conditions
- Management information systems for monitoring consumption and stock levels

Field Assessment Team Members

- Three teams of four with representation from central and district levels (program manager; data collection/reporting; stores management and distribution; service provision)
- Three USAID|DELIVER consultants
- Staff from NAS M&E Unit
- National VCCT/ART Coordinator
- Laka warehouse staff
- District CHO and HIV/AIDS Counselors

Criteria for Site Selection

- Agreement with NAS on selection of sites to be included in field assessment
  - Follow supply chain from central level to end users (Laka warehouse/Connaught Hospital to Districts to PHUs)
  - Urban, semi-urban and peripheral sites (high volume, low volume)
  - Well-functioning sites
  - Sites with supply problems
  - Different geographical areas
  - Feasible within time and resource constraints

Facilities Visited

- Western Area:
  - Connaught Hospital; UMC Hospital; Rokupa Hospital
- Laka Warehouse
- National Reference Laboratory
- Six of 12 districts:
  - Northern Province: Kambia, Port Loko, Bombali, Tonkolili
  - Southern Province: Bo
  - Eastern Province: Kenema
  - Visited the district government hospital and one PHU in each district
- Total of 17 facilities visited

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Assessment Findings

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Product Selection and Use: HIV Test Kits

Strengths:

- Evaluation of HIV test kits conducted for Sierra Leone
- National Guidelines for Use of Rapid HIV Tests include standardized list of HIV test kits and testing algorithm
- Compliance with National HIV Testing Algorithm at facilities with few exceptions

Challenges/Issues to be addressed:

- Procurement and distribution of additional consumables required for HIV testing
- Coordination of multiple sources of supply of HIV test kits; IRC, MSF, MOHS

ARV Drugs: Product Selection and Use

Strengths:

- Recently revised National Antiretroviral Treatment Guidelines
- Guidelines include ARV drug regimens for adults, children, PMTCT (mothers and newborns), HIV/TB co-infection and post-exposure prophylaxis
- Number of ARV drug regimens is limited (facilitates prescribing and dispensing, streamlines supply chain mgmt, helps to ensure quality of care)
- Single drug and fixed dose combinations being procured

ARV Drugs: Product Selection and Use

Challenges/Issues to be addressed:

- Drug supply driving prescribing and dispensing
  - Stockouts of drug formulations to be able to meet patient needs for single drug substitution within a regimen leading to regimen changes
- Limited provider understanding and compliance with National Antiretroviral Treatment guidelines:
  - Knowledge of ARV drugs (drug dosages, single drug vs. double and triple fixed-dose combination formulations)
  - Management of ARV drug regimens (drug substitution within regimens, switching between 1st line regimens)

Forecasting and Quantification

Strengths

- Two year forecasts of ARV drug and HIV test kit needs for national program conducted at NAS (per GFATM requirements)
- ARV drug forecast based on assumptions on:
  - percentage of patients expected to be on specific ARV drug regimens (adult and pediatric 1st and 2nd line, PMTCT, PEP, HIV/TB co-infected)
- HIV test kit forecast based on:
  - projected number of people expected to be tested (VCCT, PMTCT, Diagnostic Testing)
- Annual forecast of HIV test kit needs for expansion of PMTCT based on targets of pregnant women, exposed children and partners to be tested

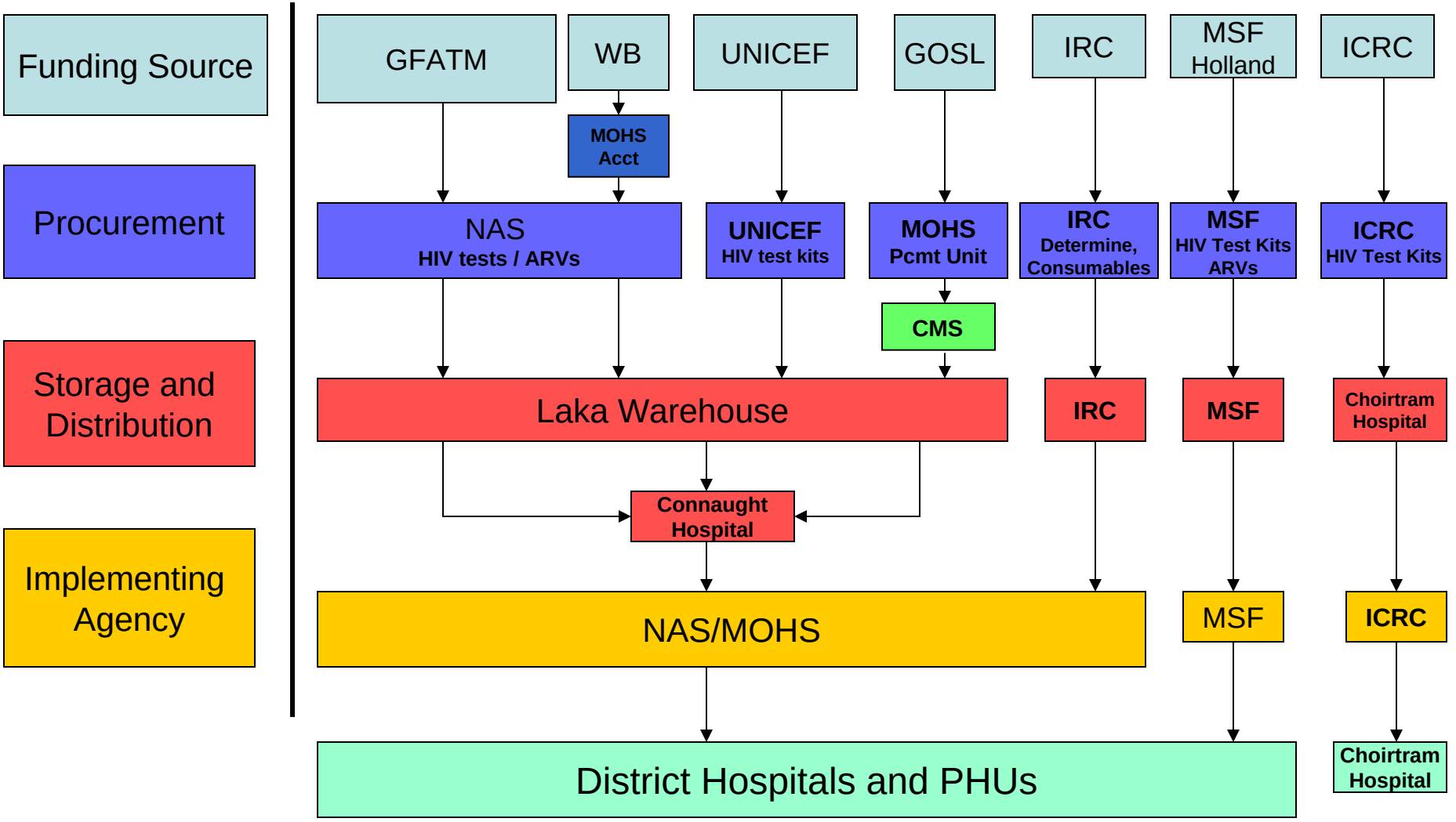
Forecasting and Quantification

Challenges/Issues to be Addressed:

- Responsibility for forecasting concentrated on one person rather than team approach
- No standardized forecasting methodology for ARV drugs and HIV test kits (except PMTCT)
- Forecast does not include adjusted quantities of drugs needed to cover procurement and supplier lead times and inventory levels
- Short-term forecasting does not allow for timely resource mobilization and procurement planning to ensure continuous supply of commodities in scaling-up environment

Financing, Procurement and Distribution of ARV Drugs and HIV Test Kits

Sierra Leone - April 2007



Financing for Commodity Procurement

Strengths

- Multiple sources of funding for procurement of ARV drugs and HIV test kits
- Funding for procurement of ARV drugs and HIV test kits secured through GFATM for two years (Rd 6)
- UNICEF to cover 50% of HIV test kit needs for expansion of PMTCT in 2007
- UNICEF support for procurement of commodities for PMTCT and Pediatric ART available to fill gaps
- GOSL budget allocation for 2007 ($260K), procurement in process

Financing for Commodity Procurement

Challenges/Issues to be Addressed:

- Last WB funded consignment received March 2007
- MSF Holland support to end August 2007
- No medium to long term plan for sustainability of financing for commodity procurement to support scale-up
- Concern regarding program sustainability in 2008 when implementation of HIV/AIDS activities is devolved back to MOHS

Procurement Capacity and Planning

Strengths:

- Established procurement capacity at NAS
- Established procurement capacity at MOHS
- Procurement support available from UNICEF through Copenhagen if needed
- Ongoing communication between NAS and MOHS Pcmt Unit and NAS and UNICEF on quantities of ARVs and HIV test kits to be procured

Procurement Capacity and Planning

Challenges/Issues to be Addressed:

- Need to coordinate procurement lead times, quantities, and shipment delivery schedules of all partners
- Delayed disbursement of MOHS budget allocations for commodity procurement results in long lead times

Data Collection and Reporting – HMIS

Strengths:

- Well-established collection and monthly reporting of service statistics and demographic data on people receiving the services
  - clients tested for VCCT, PMTCT and Blood Safety
  - number of ART patients that received drugs during the month
- Daily register books and monthly summary report forms available for data collection and reporting at facilities (ART, VCCT, PMTCT)
- Re-supply of ARV drugs and HIV test kits is dependent on submission of “returns”

Data Collection and Reporting- LMIS

Challenges/Issues to be Addressed:

- No collection and reporting of logistics data on quantities of products being used and in stock
  - **Consumption**
    - Quantities of HIV tests used (numbers of tests, not kits)
    - Quantities of ARV drugs dispensed (number of tablets, capsules, bottles of liquid formulations)
  - **Stock on Hand**
    - Quantities of usable product in stock
  - **Losses/adjustments**
    - Quantities of product lost due to damage/expiry; quantities transferred between facilities

Purpose of LMIS

- Collection and reporting of logistics data needed to:
  - Monitor consumption and stock levels at facilities and at national level
  - Calculate order quantities for re-supply at facility level
  - Improve accuracy of forecasting and quantification at national level

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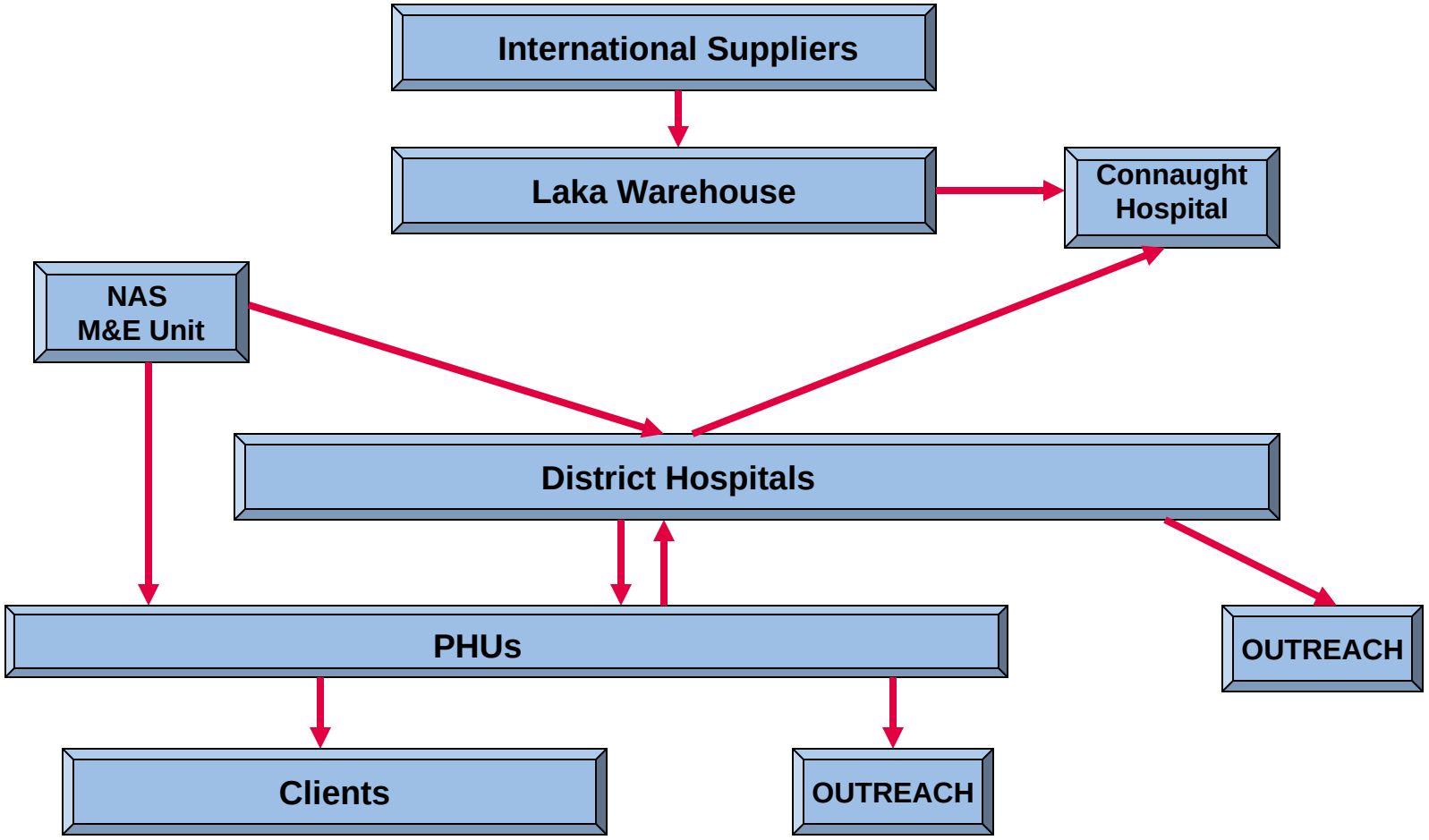
Supply Pipeline for ARV Drugs and HIV Test Kits



Inventory Control System

Challenges/Issues to be Addressed:

- No established inventory control system for monitoring and managing stock levels of ARV drugs and HIV test kits at facilities and central level
  - Unable to monitor and maintain appropriate stock levels to avoid stock outs and overstocking which leads to expiry/loss of product
  - Needed to know when and how to calculate order quantities for re-supply
- Despite established order intervals and distribution of ARVs and HIV test kits, PHUs requesting from Districts, Districts are borrowing from NGOs, mission hospitals as needed

Facility Ordering

Strengths:

- Established Order Interval
  - Monthly ordering for HIV test kits
  - Quarterly ordering for ARV drugs although some PHUs re-supply from districts on an as needed basis
- One order per facility (district hospital, PHUs)
  - ARV drugs
  - HIV test kits - data collection occurring at multiple testing sites within facility, one order for the facility
- Participatory process for determining Order Quantities for each facility
  - Districts and PHUs review monthly reports
  - Districts and NAS M&E determine order quantities together
  - Using service statistics data and estimating increase in quantities needed for new patients on ART, and expected no. people to be tested

Facility Ordering

Challenges/Issues to be Addressed:

- Service statistics and logistics data needed to calculate order quantities for ARV drugs and HIV test kits not collected and reported:
  - Service statistics data
    - Total No. Patients on ART by Regimen
      - No. Continuing Patients by Regimen
      - No. New Patients by Regimen
  - Logistics data (ARV drugs and HIV tests)
    - Usable stock on hand at each facility
    - Losses and adjustments to inventory
    - Consumption data

Distribution/Transport

Strengths:

- Products being delivered/collected via multiple modes of transport
  - between Districts and Freetown, Districts and PHUs
- Short lead time for ordering and distribution between District and Central level and between District and PHUs (usually < 1 week)

Distribution/Transport

Challenges/Issues to be Addressed:

- No designated mode of transport for collection/distribution of HIV/AIDS commodities
- Delays in collection/delivery when transport depends on other activities, or availability of vehicle
- Increasing volume of products to be transported, limitation in vehicle capacity (ARVs, OI and STI drugs, test kits, consumables…..)
- No budget line item for transportation costs at District and PHU levels, public transport costs covered out-of-pocket

Storage Capacity: Laka Warehouse

Strengths:

- Sound Infrastructure – enclosed space, concrete walls/floors, roof in good condition.
- Clean, well-maintained, no signs of rodents, insects
- Secure, authorized personnel available for access to commodities
- Air-conditioned storage rooms for ARV drugs and HIV test kits
- Products stored on pallets and shelving
- Adequate lighting
- Storage space only used for drugs and medical supplies

Storage Capacity: Laka Warehouse

Challenges/Issues to be Addressed:

- Structure not designed as a warehouse (stairs, no loading/ unloading and staging areas for receiving and issuing)
- Storage space currently inadequate, unable to accommodate program expansion
- Expired products stored with usable products, taking up limited space
- Unable to monitor/verify storage temperature

Storage Capacity: National Reference Lab

Strengths:

- Sound Infrastructure, Nat'l Reference Laboratory located within Laka warehouse
- Two laboratory rooms clean and well-maintained
- Only ELISA test kits stored in solar powered refrigerator

Challenges/Issues to be Addressed:

- Laboratory working space will be limited once new equipment arrives
- Refrigerator for ELISA test kits
  - no thermometer, blank temperature chart
  - inadequate space, emptying kit contents loosely inside refrigerator
  - expired test kit trays and bottles of reagents stored with usable products

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Storage Capacity: Connaught Hospital

- Too far away for districts to come and collect from Laka warehouse, stocks transferred to Connaught Hospital in Freetown
- Connaught hospital drugstores room also used as satellite storage and collection point for districts
- Storage space at Connaught Hospital limited, requires repeated transfer of stocks from Laka warehouse, unable to accommodate program expansion

Storage Capacity: Districts, PHUs

Strengths

- Assigned storage areas for ARV drugs and HIV test kits
- Districts/PHUs meeting storage needs in different ways
  - Storage and issuing of ARV drugs integrated within hospital pharmacy stores,
  - Separate storerooms with shelving for HIV/AIDS commodities, and
  - ARV drugs and HIV test kits stored in counselor's offices
  - HIV test kits stored on shelves in locked laboratory cabinets or refrigerator in counselor's offices
- Storage space adequate for program expansion at most sites visited
- Solid infrastructure of storage areas, storerooms, counseling offices and storage cabinets routinely locked
- Most storage areas well-lit and ventilated

Storage Capacity: Districts, PHUs

Challenges/Issues to be Addressed:

- Storage space inadequate for program expansion in a few sites visited
- Available storage space occupied by expired products, empty boxes, and non-medical supplies
- Disorderly and cluttered arrangement of products taking up more space than needed
- Some storage areas poorly lit and minimal ventilation

Stockkeeping Practices

Strengths

- Stock cards for ARV drugs and HIV test kits available and updated at Laka warehouse
- Connaught hospital and four of six district hospitals visited had stock cards
- In some PHUs, products were neatly arranged and easily accessible on shelves in cabinets

Stockkeeping Practices

Challenges/Issues to be Addressed:

- Stock cards not available for all products, not routinely and accurately updated at all districts visited
- No stock cards at PHUs
- Physical inventory not always matched balance on stock card
- Stock cards and products not managed by expiration date
- First to Expire/First Out not followed
- Products not arranged so identification labels and expiry dates easily visible
- Visual inspection and physical count not performed at time of receipt into warehouse

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RECOMMENDATIONS

Product Selection and Use

- Conduct provider refresher training to review and strengthen:
  - knowledge of ARV drugs (drug dosages, single drug vs. double and triple fixed-dose combination formulations)
  - management of ARV drug regimens (drug substitution within regimens, changing 1st line regimens, switching from 1st to 2nd line regimens)

Logistics MIS

- Design and implement a Logistics MIS for routine collection and reporting of logistics data on consumption and stock levels of ARV drugs and HIV test kits

Inventory Control System

- Design and implement a maximum/minimum inventory control system for ARV drugs and HIV test kits to be able to:
  - monitor and maintain appropriate stock levels to avoid stock outs and overstocking which leads to expiry/loss of product
  - calculate correct order quantities for full supply

Storage Space

- At central level:
  - secure additional storage space appropriate for warehousing drug commodities and to accommodate program expansion
  - closely monitor current stock levels; remove all expired products; adjust shipment quantities and delivery schedules if needed

Stockkeeping Practices

- At all levels:
  - label and separate expired products from usable products in storage
  - remove and dispose of expired product according to established procedures
  - “de-junk” all storage areas; remove all non-medical items from drugstores (empty boxes, suitcases, files, chemicals)
  - install functioning thermometers and implement consistent use of temperature monitoring charts to meet temperature requirements

Stockkeeping Practices cont'd

- At all levels:
  - Standardize use of stock cards for ARV drugs and HIV test kits at all levels
    - use of stock cards for each product, by expiry date
    - update stock balances upon receipt and issue of product and to reflect losses/adjustments to inventory
  - Implement practice of First to Expire, First Out (FEFO) at all storage facilities
  - Arrange products in storeroom so identification labels and expiry dates are easily visible
  - Conduct visual inspection and physical count at time of receipt into warehouse and on routine basis

Forecasting and Quantification

- Conduct national forecasting and quantification exercise with participation of all partners involved in funding and procurement of HIV/AIDS commodities
- Utilize established methodology for forecasting ARV drugs based on:
  - Data or assumptions on number or percentage of continuing patients on ART by regimen
  - Data or assumptions on number or percentage of new ART patients and which regimens they will be on
  - Assumptions on expected rates of drug substitution and regimen change due to side effects and toxicity
  - Data or assumptions on number of patients that will require regimen switch from 1st line to 2nd line regimen due to treatment failure or resistance

Forecasting and Quantification

- Utilize established methodology for forecasting HIV test kits:
  - Expected number of people to be tested by purpose of testing
  - HIV prevalence by purpose of testing
- Calculate additional quantities of product required to maintain established maximum/minimum stock levels (includes quantities to cover lead times, buffer stock)
- Update forecasts of ARV drug and HIV test kit requirements at least every six months

Financing for Commodity Procurement

- Identify and coordinate funding inputs for procurement of commodity requirements (sources, amounts and timing of funding)
- Develop sustainability plan to ensure medium to long term financing for procurement of HIV/AIDS commodities

Procurement Planning

- Coordinate procurement quantities, lead times and shipment delivery schedules of different partners to ensure uninterrupted supply of HIV/AIDS commodities

Coordination

- Consider the Partnership Forum as mechanism for partner communication, coordination, advocacy and commitment to ensuring short and long term HIV/AIDS commodity availability

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Thank You !

Questions & Answers

For more information, please visit www.deliver.jsi.com.

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