Preliminary Assessment of HIV/AIDS Commodity Needs
And Logistics Capacity in Tanzania

Ministry of Health
United Republic of Tanzania

FINAL REPORT

May 2001

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DELIVER
John Snow, Inc
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While we acknowledge the contribution made by individuals and organizations, the content and form of the report remains the responsibility of the authors jointly and not of the organizations and individuals mentioned.
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<th>Description</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immuno-Deficiency Syndrome</td>
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<tr>
<td>AMREF</td>
<td>African Medical and Research Foundation</td>
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<td>ANC</td>
<td>Ante-natal Care</td>
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<tr>
<td>BCC</td>
<td>Behavior Change Communication</td>
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<td>CSSC</td>
<td>Christian Social Services Commission</td>
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<td>ELISA</td>
<td>Enzyme Linked Immunosorbent Assay</td>
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<td>FPMLM</td>
<td>John Snow Inc./Family Planning Logistics Management Project</td>
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<td>HIV</td>
<td>Human Immuno-Deficiency Virus</td>
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<td>HMIS</td>
<td>Health Management Information System</td>
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<td>HSR</td>
<td>Health Sector Reform</td>
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<td>IEC</td>
<td>Information, Education and Communication</td>
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<td>HTAs</td>
<td>High Transmission Areas</td>
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<td>LMIS</td>
<td>Logistics Management Information System</td>
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<td>MOH</td>
<td>Ministry of Health</td>
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<td>MSD</td>
<td>Medical Stores Department</td>
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<td>MTC</td>
<td>Mother-To-Child-Transmission</td>
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<td>MTUHA</td>
<td>National Health Management Information System (in Kiswahili)</td>
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<td>MUCHS</td>
<td>Muhimbili University College of Health Sciences</td>
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<td>NACP</td>
<td>National AIDS Control Programme</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<tr>
<td>PLWHAs</td>
<td>People Living With HIV/AIDS</td>
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<td>PSI</td>
<td>Population Services International</td>
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<td>PVO</td>
<td>Private Voluntary Organization</td>
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<td>RCHS</td>
<td>Reproductive and Child Health Section</td>
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<tr>
<td>RPR</td>
<td>Rapid Plasma Reagin</td>
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<td>SDP(s)</td>
<td>Service Delivery Point(s)</td>
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<tr>
<td>STD(s)</td>
<td>Sexually Transmitted Disease(s)</td>
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<td>STI(s)</td>
<td>Sexually Transmitted Infection(s)</td>
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<tr>
<td>TACAIDS</td>
<td>Tanzania National Commission for AIDS</td>
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<tr>
<td>TB</td>
<td>Tuberculosis</td>
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<tr>
<td>TDHS</td>
<td>Tanzania Demographic and Health Survey</td>
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<tr>
<td>TRCHS</td>
<td>Tanzania Reproductive and Child Health Survey 1999</td>
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<td>VCT</td>
<td>Voluntary Counseling and Testing services</td>
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<td>VSO</td>
<td>Voluntary Service Organization</td>
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<td>WRA</td>
<td>Women of Reproductive Age</td>
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### Donor Acronyms

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<tr>
<th>Acronym</th>
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<tr>
<td>DANIDA</td>
<td>Danish International Development Agency</td>
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<tr>
<td>DFID</td>
<td>British Department for International Development</td>
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<td>DGIS/RNE</td>
<td>DGIS/Royal Netherlands Embassy</td>
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<td>EDF</td>
<td>European Development Fund</td>
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<td>EU</td>
<td>European Union</td>
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<td>GTZ</td>
<td>German Agency for Technical Cooperation</td>
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<td>IAID</td>
<td>Irish Agency for International Development</td>
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<td>JICA</td>
<td>Japan International Cooperating Agency</td>
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<td>KW</td>
<td><strong>German Development Cooperation/German Financial Cooperation</strong></td>
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<tr>
<td>NORAD</td>
<td>Norwegian Agency for Development</td>
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<td>UNAIDS</td>
<td>Joint United Nations Programme on AIDS</td>
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<td>UNFPA</td>
<td>United Nations Population Fund</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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I. Executive Summary

“No Product? No Program.”

Indispensable to the success of any health program is the guaranteed supply and availability of the commodities needed to support service provision. Health programs are frequently unable to implement activities and meet the demand for health services despite the best program planning efforts because the system for supply and management of the commodities failed, or was not taken into consideration from the outset.

In Tanzania, one of the recognized constraints to successful implementation of the national strategies to combat the HIV/AIDS pandemic is the limited capacity to provide a reliable supply of the needed commodities to support HIV/AIDS Prevention and Care interventions. The logistics systems for these commodities typically suffer from irregular supply of insufficient quantities of product leading to shortages and stock-outs thereby undermining efforts to implement programs and denying the population access to needed health services.

The Six Rights

The purpose of a logistics system is to ensure availability of the Right Product, of the Right Quality, procured in the Right Quantity and distributed to the Right Place, at the Right Time and at the Right Cost to its customers, the end users in the system. A well functioning logistics system must be able to fulfill the Six Rights if the needed commodities are to be available to meet demand at all levels in the health system.

While the government’s lack of financial resources for procurement of HIV/AIDS commodities for Tanzania certainly constitutes a significant barrier to providing the needed quantities of these commodities, overcoming this barrier alone will not ensure the ultimate availability of these commodities to the people who need them, where they need them. All functions within the logistics system must be addressed including collection and analysis of logistics data on consumption and stock levels; product selection; forecasting and requirements estimation; procurement; storage and distribution; inventory control; and service delivery; - all with the ultimate goal of meeting the needs of the customers for whom the system exists.

Summary

In response to growing recognition of the magnitude and devastating effect of the HIV/AIDS pandemic in Tanzania and the increasing commitment from government and international donor organizations to support HIV/AIDS Prevention and Care, USAID/Tanzania asked the John Snow, Inc/DELIVER Project, a USAID Cooperating Agency specialized in logistics management of essential health commodities, to collaborate with the Ministry of Health in conducting an initial assessment of 1) the key commodities and supplies needed to support HIV/AIDS prevention and care activities in Tanzania, and 2) the capacity of the existing logistics systems to monitor and distribute these commodities. As part of this exercise, the “Right Quantity” of commodities needed to support HIV/AIDS Prevention and Care activities in Tanzania has been examined and preliminary estimates of requirements and cost estimates for the year July 2001 – June 2002 have been calculated for selected HIV/AIDS commodities.

The accuracy of the requirements estimations and cost estimates for the HIV/AIDS commodities in this report is subject to the availability and quality of the data inputs, and the validity of the assumptions made at the time of the JSI/DELIVER technical assistance visits. Best estimates
have been made where significant information gaps still exist. The initial assessment of current logistics system capacity to monitor and distribute the selected HIV/AIDS commodities is based on document review and numerous interviews and working sessions with key counterparts of MOH Directorates and programs, donor agencies, and NGO organizations at the central level in Dar es Salaam. No field visits were undertaken as part of the JSI/DELIVER technical assistance in this phase of the assessment of the HIV/AIDS commodity needs and logistics capacity in Tanzania. Further study and close monitoring of consumption and stock levels of any commodities procured will be needed in order to adjust the requirements estimations for the HIV/AIDS commodities documented in this report to minimize overstocking, product losses, shortages, and stock-outs.

As the findings and recommendations of this report indicate, procurement of the HIV/AIDS commodities needed to mitigate the effects of the pandemic in Tanzania alone will not ensure that the Right commodities of the Right Quality are available in the Right Quantity, in the Right Place, at the Right Time and at the Right Cost for the people who need them. It will be critical to adapt and strengthen all components of the existing logistics systems in order to ensure a reliable supply of the commodities needed to support the government’s policies and strategies to meet the challenges of the pandemic and provide HIV/AIDS prevention and care services to its people.

The key findings on the factors affecting the availability of HIV/AIDS commodities in Tanzania and initial recommendations for strengthening the capacity of the logistics systems for managing these commodities are summarized below and discussed in greater detail in the body of this report.

**Key Findings**

1. **Logistics Management Information System (LMIS)**

   Major constraints exist in the availability and quality of data on consumption and stock status of HIV/AIDS commodities in the supply pipeline. No logistics data (consumption/use, losses and adjustments, and quantities of Stock on Hand) are available for HIV/AIDS commodities within the MOH health system except for distribution and stock levels at the central level at MSD and some logistics data on public sector condoms through the RCHS “PipeLine” software. One of the critical functions of a logistics system is the ability to calculate the correct quantities to order for resupply at each level of the system based on consumption/usage and existing stock balances. The current logistics systems for managing the HIV/AIDS commodities examined in this report; HIV test kits, RPR tests, STI drugs, condoms for HIV/STI prevention and the expendable medical supplies needed do not currently have this capacity.

2. **Forecasting and Requirements Estimation**

   Forecasting of needs to meet demand for HIV/AIDS commodities is currently based on rough estimates of numbers of units of blood to be tested, numbers of people that will request VCT, estimated numbers of STD syndromes treated, or numbers of pregnant women attending ANC clinics. Most often this information is unavailable, outdated or underestimates demand because of underreporting or services that have been restricted by inadequate supply of HIV test kits, drugs, laboratory reagents and supplies.

   Currently, the estimation of requirements for HIV/AIDS commodities to be procured does not take into account quantities needed to ensure full supply, i.e. to cover lead times and buffer
stock to avoid shortages and stock outs, nor the existing stock on hand and quantities already on order.

Forecasting of HIV/AIDS and STI commodities is short term and limited to the one or two years at a time that donors are able to commit funds for procurement with the exception of public sector condoms for which funding has been secured to fill the pipeline and ensure full supply through the year 2003. Short term forecasting and year to year funding of commodities precludes the ability to make projections of future needs and to undertake long term financial planning.

3. Procurement

In an environment of scarce financial resources and heavy dependence on donors for funding, the quantities of HIV/AIDS and STI commodities actually procured is budget driven rather than based on the forecasts of need or estimation of requirements to meet full supply thereby perpetuating the situation of shortages, stock-outs and constant rationing.

A complicated, multiple donor environment of short term financial commitments for HIV/AIDS commodities exists which leads to fragmented, piecemeal funding for commodities which can jeopardize product availability and precludes any long term forecasting capacity.

Delays in procurement have caused shortages, and parallel sources of procurement have occurred leading to inefficient use of resources and wastage of product.

However, a strength of the current system is that donor and MOH funding for HIV/AIDS commodities is provided to the Medical Stores Department (MSD) which has a well established capacity for procurement, storage and distribution of these commodities.

4. Storage and Distribution

While MSD storage and distribution capacity for HIV test kits, RPR Syphilis Antigen tests, STI drugs and expendable medical supplies seems adequate to meet current demand, the consultants were not able to visit Service Delivery Points, i.e. MOH or NGO hospital laboratory testing sites or ANC clinics outside Dar es Salaam, and it could not be ascertained from the central level if routine monitoring and supervision of storage conditions for these products at MOH health facilities takes place. The consultants have been informed that an MOH proposal to strengthen monitoring and supervision of laboratory services is currently being developed which will include monitoring of storage conditions for laboratory reagents and cold chain products.

Parallel distribution systems exist which duplicate efforts and cause inefficient use of resources (e.g. NACP and MSD distribution of public sector condoms to MOH health facilities; essential drugs and STI drugs are distributed to same health facilities through two vertical systems).

Integration of storage and distribution functions for health commodities which is a directive under Health Sector Reform, is having an important impact on availability of commodities at health facilities.¹

5. Inventory Control Systems

¹“Situational Assessment of Logistics Systems for Public Health Commodities at Selected Districts and SDPs in Tanzania.” Final Report RCHS and JSI/FPLM. September 2000
A standardized inventory control system for managing stock levels of HIV/AIDS commodities to avoid overstocking, shortages and stock-outs, and for accurately calculating quantities to order for resupply and procurement purposes does not currently exist within the MOH health system. Routine procedures for inspecting and verifying product quality, monitoring expiration dates and conducting and reporting physical inventory counts are not carried out.

6. Human Resource Capacity/Service Provision

Under Health Sector Reform, the responsibility for management and provision of health services is being devolved to Districts thereby increasing the workload on existing human resource capacity. HIV/AIDS prevention and care activities are District-based which implies that management of the supply chain for HIV/AIDS commodities will also need to be strengthened at the District level.

HIV testing of 100% of donated blood for transfusions and expansion of Voluntary HIV Counseling and Testing services within MOH facilities is constrained by the current shortage of HIV test kits, expendable supplies and laboratory equipment, and the lack of certified laboratory technologists and HIV counselors, especially at the health center and dispensary levels.

Verification of provider level of proficiency in HIV testing and validity of HIV test results is often not conducted because of shortages of HIV test kits. Quality assurance is further compromised by insufficient training and irregular monitoring and supervision of clinical and laboratory staff in health facilities.

Health workers that are poorly trained and ill-equipped to protect themselves and patients from the risk of infection undermine the quality of care and actually contribute to the spread of infectious disease. Tanzanian health services have been unable to implement standard guidelines for infection prevention and provide adequate protective gear, disinfectant solutions, and biohazard disposal supplies for all health facilities due to resource constraints.

An MOH proposal to integrate management of the laboratory services of the NACP and Malaria programs within the MOH department of Diagnostic Services at the central level is currently being developed with the goal of strengthening monitoring and supervision of MOH laboratory facilities and staff and ensuring the quality of the laboratory services being provided.

7. Infrastructure and Equipment

The fast paced evolution and introduction of new types of HIV test kits, testing technologies, STI replacement drugs, and new anti-retroviral drugs and medical supplies for treatment and care of PLWHAs requires that laboratory and health service facilities are able to provide the necessary infrastructure and equipment to support laboratory testing and service provision. While the consultants did not undertake field visits to service delivery sites during this preliminary assessment, it was reported that severe constraints related to infrastructure and availability of functioning equipment to support HIV testing exists in peripheral district health facilities. The consultants were informed that MOH policy and guidelines for standardization of procurement, maintenance and replacement of laboratory equipment are currently under development for implementation during this fiscal year July 2001-June 2002.

8. Environmental Factors Influencing Supply of HIV/AIDS Commodity Supply
Other factors within the Tanzania context directly affect functioning of the logistics systems for the supply of HIV/AIDS commodities. These include political, legal, and programmatic policies and procedures as well as socio-cultural beliefs and practices. Some of the external, environmental factors that will need to be addressed in order to improve the supply of HIV/AIDS commodities are addressed under section V. Recommendations.

**Recommendations**

The JSI/DELIVER consultants take this opportunity to reiterate and reconfirm the Findings and Recommendations set forth in the “Situational Assessment of Logistics Systems for Public Health Commodities at Selected Districts and SDPs in Tanzania” Final Report prepared by RCHS and the JSI/FPLM Project in September 2000. Several recommendations from the Situational Assessment are repeated in this report because they are as valid for improving the logistics systems of the HIV/AIDS commodities in Tanzania, as the logistics systems for the essential drugs, contraceptives, vaccines and TB/Leprosy drugs that were studied under the Situational Assessment.

In assessing the HIV/AIDS commodity needs in Tanzania and the capacity of the logistics systems to manage these commodities and ensure their availability at Service Delivery Points, the constraints considered in this report include:

- the realistic level of demand for the services by the population,
- the quantity of services that can realistically be provided by existing staff and facilities,
- the quantity of commodities that can be stored and moved through the distribution system

In assessing the needs against these constraints for the supply of HIV/AIDS commodities to confront the pandemic, the following general recommendations are offered:

1. MOH and donors should assess the current volume of services being provided and the human resource capacity, infrastructure, equipment, and expendable medical supplies required to provide HIV/AIDS prevention and care services when planning for HIV/AIDS commodity procurement.

2. MOH and donors should consider the capacity to store, distribute and monitor usage and stock status of HIV/AIDS commodities throughout the MOH health system.

3. MOH and donors should address feasibility of “full supply” for selected HIV/AIDS commodities in mobilizing international and local resources for commodity procurement.

4. MOH and donors should consider financial, technical and management support for strengthening MOH logistics system capacity to provide an adequate supply of HIV/AIDS commodities at Service Delivery Points.

5. Support development of a Logistics Management Information System (LMIS), or strengthening of existing LMIS, for routine collection and reporting of logistics data by health facilities to monitor usage and stock balances, calculate correct quantities to order, prepare more accurate forecasts of needs, and improve inventory management which will in turn

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better inform decision-making for budgeting and procurement at the central level and ultimately improve availability of products at health facilities.

6. Follow up on earlier recommendations to integrate storage and distribution of STI drugs with essential drug distribution through MSD.³

7. MOH and donors should coordinate with MSD on product selection, procurement, storage and distribution of HIV/AIDS commodities to avoid duplication of efforts and maximize efficiencies.

8. Work with the Pharmacy Supply Unit (PSU) and other relevant MOH Departments to strengthen forecasting and requirements estimation for HIV/AIDS commodities.

9. Study the impact of the Indent and Capitalization systems on integration of HIV/AIDS commodities and services into existing health services structure and the implications for logistics management and ultimate availability of these products.

II. Background

While clinically confirmed AIDS at (7%)\(^4\) is ranked third amongst the five leading killer diseases in Tanzania after Malaria (22%) and Tuberculosis (9%), the true magnitude of the disease may be greatly underestimated by lack of data, undetected and undiagnosed cases, and the denial and stigma associated with the disease. Through simulation model estimates that put the actual number of AIDS cases at 5 times those reported, the National AIDS Control Program estimates a total of 600,000 cumulative AIDS cases since 1983\(^5\). Other estimates indicate that as much as 65% of the entire health budget is consumed for AIDS patients as they progress from infection to illness to death.

According to NACP authorities, HIV prevalence in the general population is currently estimated at 10-12% with large variations by region and by population at risk, and as many as 2,000,000 people may be infected with the HIV virus. In Tanzania, the most common routes of transmission are heterosexual, Mother-to-Child, and blood transfusions respectively\(^6\). The most vulnerable populations are Commercial Sex Workers, younger women and mobile populations including military recruits, and a rising trend in HIV prevalence among youth indicates that this population is at even higher risk for HIV infection.\(^7\)

Growing recognition of the magnitude and the devastating effect of the HIV/AIDS pandemic has made this a top priority for the Government of Tanzania and has led to an increasing commitment from government and donor agencies to address HIV/AIDS Prevention and Care. Recent government efforts to combat the serious health and socio-economic impact of the HIV/AIDS pandemic include:

- the establishment of a multi-sectoral, Tanzania National Commission for AIDS
- a statement by the President in his speech during World AIDS Day calling upon the public to come forward for Voluntary HIV Counseling and Testing

The U.S. – Japan Common Agenda

Since 1993, the U.S. and Japan Governments have been working together under a global strategic alliance to develop and implement collaborative and complementary development programs known as the U.S. – Japan Common Agenda, with USAID and JICA as the local implementing agencies. The U.S. – Japan Common Agenda proposed a joint Project Formulation Mission team to visit Tanzania from January 22 – February 2, 2001 to identify areas of possible joint collaborative work. Preliminary discussions in-country had already identified HIV/AIDS Prevention and Care as an important area for possible technical and financial assistance, including a component to improve availability of the key commodities and supplies needed to support HIV/AIDS prevention and care activities.

III. Purpose of JSI/DELIVER Technical Assistance

Therefore, in preparation for the upcoming U.S. – Japan joint Project Formulation Mission to Tanzania, USAID/Tanzania asked the John Snow, Inc/DELIVER Project, a USAID Cooperating Agency specialized in logistics management of essential health commodities, to collaborate with the Ministry of Health in conducting an initial assessment of 1) the key commodities and

\(^7\) National AIDS Control Programme Strategy, Mainland Tanzania under MTP III 1998- 2002

John Snow, Inc/DELIVER
supplies needed to support HIV/AIDS prevention and care activities in Tanzania, and 2) the capacity of the existing logistics systems to monitor and distribute these commodities.

To this end, JSI/DELIVER consultants traveled to Dar es Salaam in December 2000 to participate in a series of meetings and technical discussions with USAID/Tanzania, MOH officials, the local JICA Advisor, other donor agencies, and NGO and church organizations involved in HIV/AIDS prevention and care activities in Tanzania. This was followed by a second visit in January and early February 2001 to collaborate with USAID/Tanzania, the MOH and local JICA representatives to support the MOH in preparing for the joint U.S.- Japan Project Formulation Mission, and to continue the HIV/AIDS Commodity Quantification and Cost Estimate exercise with MOH counterparts.

**Technical Objectives**

Under the original Scope of Work, (see Appendix A), USAID/Tanzania asked the John Snow, Inc/DELIVER Project to collect existing information on commodity needs, provide best estimates of requirements, and examine the distribution systems for a broad range of HIV/AIDS commodities to be able to provide as much information as possible to the joint Project Formulation Team on arrival. Specific activities included:

- Identify the HIV/AIDS, STI and other key commodities needed
- Collect information on sources of donated commodities
- Determine data sources and quality of the information available
- Document the quantification methodology
- Identify policies and practices which affect availability and use of these commodities
- Provide preliminary assessment of logistics capacity for selected commodities

During the two visits, the John Snow, Inc/DELIVER consultants worked in close collaboration and with full approval of the Ministry of Health to estimate requirements and prepare cost estimates for selected HIV/AIDS commodities, and to identify the logistics issues affecting the supply, distribution, monitoring, and ultimate availability of these commodities.

**III. Findings**
The Government of Tanzania’s comprehensive, multi-sectoral policy on HIV/AIDS prevention and care is documented in the current “Strategic Framework for the Medium Term Plan (MTP-III) for Prevention and Control of HIV/AIDS/STDs 1998-2002”. Eleven priority areas are identified according to the social, behavioral and biological determinants of the HIV/AIDS pandemic in Tanzania which are based on known risk factors and the vulnerability of specific populations to HIV infection. Within each priority area, the recommended strategies, specific interventions, and key actors are described.\(^8\)

**A. Commodities Needed for HIV/AIDS Prevention and Care in Tanzania**

1. **HIV/AIDS Prevention and Care Interventions**

The following HIV/AIDS Prevention and Care interventions have been articulated as part of the national response to the HIV/AIDS pandemic in Tanzania:

- Improve management of Sexually Transmitted Diseases
- Reduce transmission of HIV/STI infection
- Increase condom availability and accessibility; and ensure product quality
- Expand Voluntary Counseling and Testing (VCT) services
- Ensure Safety of Blood Supply
- Strengthen Syphilis screening and treatment for pregnant women during Ante-natal Care
- Promote Health Worker and Patient Safety
- Prevention of Mother-To-Child-Transmission
- Provide treatment of HIV/AIDS related Opportunistic Infections (particularly TB)
- Strengthen HIV/AIDS Care and Support Services

The implementation and success of each of these interventions is dependent on a continuous supply of adequate quantities of the commodities needed to support the intervention.

2. **The Commodities**

The commodities needed to support the HIV/AIDS Prevention and Care interventions being implemented in Tanzania today are:

- HIV Test Kits and Expendable Medical Supplies required for Blood Safety, Voluntary Counseling and Testing (VCT), and Sentinel Surveillance for monitoring of the HIV/AIDS pandemic
- Drugs, Reagents and Expendable Medical Supplies for Syndromic Management of Sexually Transmitted Infections
- Condoms for prevention of HIV/STI transmission, especially for targeted high risk populations
- Syphilis screening tests (RPR Syphilis Antigen Test), and Drugs and Expendable Medical Supplies for Syphilis treatment

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❯ Gloves, other protective gear, and disinfectants to ensure Health Worker and Patient Safety in accordance with Universal Infection Precautions

❯ Additional quantities of essential drugs needed to treat growing incidence of HIV/AIDS related opportunistic infections in hospitalized patients, particularly TB

❯ Anti-retroviral drugs to prevent Mother-To-Child Transmission

❯ Anti-retroviral drugs for treatment of PLWHAs

❯ Essential drugs needed to complete Home Based Care Kits for AIDS patients

❯ Laboratory equipment required to support HIV testing

As this list demonstrates, a wide spectrum of commodities is needed to support the full range of HIV/AIDS prevention and care interventions underway in Tanzania. Those interventions which were most likely to receive technical and financial support under the U.S.-Japan Common Agenda were selected for closer examination. Thus, HIV Testing for Blood Safety, Voluntary Counseling and Testing, and for Sentinel Surveillance; Syndromic Management of STDs; Syphilis Screening and Treatment of Pregnant Women in ANC clinics; and increased availability of public sector condoms became the focus of this study. An estimation of the requirements and cost estimates for the commodities needed to support each intervention was prepared for possible funding support. (See section C. Quantification Methodology)

3. Current Stakeholder Inputs

Numerous stakeholders across all sectors of society and government in Tanzania are invested in the challenge of preventing the spread of HIV infection and battling the devastating effects of the pandemic in the country. Major stakeholders include all government Ministries, the new Tanzania National Commission for AIDS, national health programs (e.g. NACP, RCHS, TB), multiple international donor agencies, a host of NGOs and religious organizations, private foundations and hospitals, and most importantly, those persons, families and communities directly affected by HIV/AIDS themselves.

A wide range of international organizations provide financial, technical and management support to Tanzanian government entities and local NGOs. Funding for procurement of the commodities needed to support HIV/AIDS Prevention and Care in the country is heavily donor dependent at this time. The complicated, multi-donor environment and the specific Donor Inputs in terms of funding for procurement of essential drugs, Reproductive Health and Maternal and Child Health products, TB/Leprosy drugs and HIV/AIDS commodities including HIV Test Kits, STD Drugs, diagnostic reagents and expendable medical supplies is depicted in Appendix D: Commodity Flow Chart 1 – TANZANIA.

B. Data Sources and Quality of Information

Introduction and General Findings

During the technical assistance visits, JSI/DELIVER consultants conducted a broad review of HIV/AIDS policy documents, pharmaceutical policies and regulations, laboratory testing procedures, individual program documents and reports, and Standard Treatment Guidelines amongst others. (See Appendix H: List of References). The consultants also participated in
extensive interviews and working sessions with various MOH authorities, representatives of international donor agencies, the MSD Director of Distribution and Sales, local program managers and NGO staff to obtain the information needed to estimate the commodity requirements and learn about the capacity of the logistics system to monitor and distribute the selected HIV/AIDS commodities noted below. (See Appendix G: List of People Interviewed). Field visits were not included in the technical assistance visits therefore all information has been collected exclusively from sources available at the central level of the Ministry of Health, international donor agencies and NGOs located in Dar es Salaam.

Ideally, logistics data (consumption and stock-on-hand data including losses and adjustments to inventory due to damage, expiry, quantities used for training and quality assurance, etc) is the best data to use for forecasting and estimation of commodity requirements. In the absence of logistics data, other types of data can be used as “proxy” data from which to extrapolate and make assumptions to estimate the quantities needed of a given product. Other possible sources of data include service-statistics reports, morbidity data and finally, population based data as the last resort in the absence of data originating from actual service delivery sites.

At this time, no logistics data is available at the central level on consumption and stock levels of HIV test kits, STD Drugs, RPR Syphilis Antigen tests, or expendable medical supplies used throughout the MOH health system for HIV/AIDS prevention and care activities other than stock balances and distribution from the MSD central and zonal warehouses. Therefore, demographic and morbidity data have been used for lack of logistics data and in place of incomplete or outdated service based data to be able to estimate the requirements for HIV test kits for all purposes, STD drugs, RPR Syphilis antigen tests, and the expendable medical supplies needed to support testing and treatment. It is important to note here that the use of demographic data tends to lead to overestimation in forecasting as many assumptions must be made in order to compensate for information gaps in the quantification methodology.

1. HIV Test Kits

HIV test kits for Blood Safety, VCT and Sentinel Surveillance are stored and distributed by MSD except for a small stock of HIV test kits for Blood Safety kept in a refrigerator at NACP program offices in Dar es Salaam. The only information available at the central level on quantities of HIV test kits in the MOH health system is MSD’s stock-on-hand and distribution data. No data is recorded and reported to the central level on the actual quantities of HIV tests used and stock on hand at any other level of the system.

a. Blood Safety

Service statistics data are available on HIV tests conducted on blood donors. The NACP Blood Donor HIV Register Form ID No. C01212 reports the type and number of HIV Tests conducted at MOH and NGO hospitals that provide blood transfusion services. The results of the test and some demographic data on the blood donor is recorded. Because service statistics do not capture use of HIV tests for other purposes, i.e. laboratory controls, quality testing, clinical diagnosis and wastage, these statistics are of limited use in preparing a forecast of quantities required. Assumptions and estimates of use must be made according to population estimates of number of units of blood to be transfused, established quality assurance procedures for conducting laboratory controls and quality testing, and wastage rates for HIV tests. (See section C. Quantification Methodology).
b. Voluntary HIV Testing and Counseling

Current stock levels of “Capillus” HIV1/HIV2 rapid assay tests for supporting VCT within the public sector are virtually depleted at this time and no funding is available for procurement of HIV Tests to support these services. Service reporting of the number of clients counseled and the number actually tested was regularly submitted to the NACP Social Services and Counseling Coordinator, but because of the collapse of these services due to lack of HIV test kits, this data cannot be used to estimate the quantities of HIV test kits that would be needed to support unmet demand for VCT. In this report, estimates of the quantities of HIV test kits needed to support the existing VCT capacity in the public sector are based on a recent population survey in which respondents were asked about their desire to access VCT services, and current capacity of human resources to provide the service. (See section C. Quantification Methodology). Data on stock levels and consumption of HIV tests used to support VCT in NGO and church organizations was unavailable at the central level.

c. Sentinel Surveillance for HIV and Syphilis

Results of HIV surveillance testing of pregnant women during Ante-natal Care visits are reported on the NACP Sentinel Surveillance, HIV Sentinel Book Form ID No. B01660 and submitted to the central NACP office. HIV testing for surveillance purposes is done using ELISA tests only and Syphilis testing is conducted using the RPR Syphilis Antigen Test. It is unclear at this time which form is used for reporting RPR test results from Sentinel Surveillance sites.

Because sentinel surveillance testing is restricted to a predetermined sample size of pregnant women at designated urban and rural sites for a limited period of time, estimation of requirements for HIV Tests and RPR Syphilis Antigen tests for this purpose is much simpler. Additional quantities of ELISA tests must also be estimated to cover needs for confirmatory testing of positive results and for quality testing. (See section C. Quantification Methodology).

2. Drugs for Syndromic Management of STDs

Although a form for collecting logistics data at MOH health facilities for tracking quantities of STD drugs dispensed, stock-on-hand, and for calculating quantities to order exists, namely the “Recording/Ordering Form for STD Drugs” Form 6.7, these forms have fallen into disuse and currently serve as a simple requisition form without reporting any logistics data. A review of these completed forms submitted by Districts to NACP revealed that MOH health facilities typically stock out of STD drugs before reordering.

Service statistics on the number of cases of STDs diagnosed using the algorithm for syndromic management of STDs and the number of partners notified and treated are reported on the NACP Monthly STD Report Form ID No. E02246. Reporting of service statistics data on the Monthly STD Reports from Districts in the 12 regions is incomplete and data entry and processing is delayed at NACP. The 2000 Monthly STD Reports had not been aggregated as of February 2001. Therefore, this information could not be used to produce more accurate forecasts for procurement.

Population data on prevalence of individual syndromes, standard treatment guidelines, the syndromic algorithm and numbers of cases projected for 2000 were used to estimate the quantities of STD drugs required for July 2001 – June 2002. The estimation of STD drug

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9 Tanzania Reproductive and Child Health Survey, 1999
requirements is further complicated by the fact that drugs used for STD treatment are also essential drugs which means that they may be used for other purposes at health facilities and vice versa, in the absence of STD drugs, drugs may be used from the essential drugs kits for treatment of STDs. Recent trends confirming drug resistance to two of the first line antibiotics prescribed under the Syndromic Algorithm in Tanzania requires that patients receive additional treatment with second and third line drug regimes which additionally complicates the estimation of the quantities of drugs needed. (See section C. Quantification Methodology).

3. RPR Syphilis Antigen Tests and Drugs for Syphilis Treatment in Ante-natal Care Clinics

Syphilis screening of pregnant women during the first ante-natal care visit in MOH facilities has been implemented on a limited scale in 12 regions while expansion to other regions has reportedly come to halt due to lack of RPR Syphilis Antigen tests\textsuperscript{10}. Data on the results of Syphilis screening of pregnant women is to be reported separately from other cases of clinically diagnosed Syphilis on the back of the “Recording/Reporting Form for STD Drugs” Form 6.7 but is subject to the same problems of incomplete and untimely reporting of these forms, (see 2. above). Both syndromically and clinically diagnosed Syphilis cases are to be aggregated and recorded under the category of “Genital Ulcers” under STD episodes treated on the NACP Monthly STD Report Form ID No. E02246 along with some demographic data and numbers of episodes retreated and contacts notified and treated.

In order to estimate the quantities of RPR Syphilis Antigen tests and the expendable medical supplies needed to improve services in the 12 regions and expand Syphilis screening in pregnant women attending ANC clinics to all 20 regions of Mainland Tanzania, data on the number of women screened from the NACP 1999 report and the 2000 STD Program EU Proposal was used and projected to cover the percentage of women of the total population expected to become pregnant and attend ANC services in the period July 2001- June 2002. The quantities of drugs and expendable medical supplies needed for treatment of sero-positive cases detected by Syphilis screening was also projected from NACP data on Syphilis prevalence in pregnant women from 1999. (See section C. Quantification Methodology).

4. Public Sector Condoms for HIV/STI Prevention

Condom requirements for Family Planning and HIV/STI prevention that are distributed through MOH health facilities and non-clinical sites (e.g. bars, brothels and restaurants) are estimated using the PipeLine software at RCHS which manages logistics data on all contraceptives for forecasting and procurement planning purposes. The actual quantities of condoms needed comes directly from the PipeLine reports and is only as accurate as the quality and timeliness of the data that is entered into the software. Although reporting rates to RCHS via the “Report & Request” form are high, consumption and stock level data on all contraceptives including public sector condoms distributed through MOH health facilities has not been updated in PipeLine at the central level since August 2000.

Data on non-clinical distribution of condoms for HIV/STI prevention (e.g. bars, brothels, restaurants) by NACP is available at the central level (condoms distributed by NACP to Districts) but information on the quantities actually distributed to non-clinical sites and stock levels remaining in Districts is not available.

C. Quantification Methodology

Introduction to Estimating Requirements for “Full Supply”

Full Supply

The concept of “Full Supply” assumes that adequate quantities of a desired product of guaranteed quality will be available to users when and where needed and at an affordable price, (the Six Rights of Logistics: to deliver the Right Product, of the Right Quality, in the Right Quantities, to the Right Place, at the Right Time, and at the Right Cost). In Tanzania, the capacity to ensure Full Supply is dependent on available donor and government resources, local procurement capacity, and logistics management of the commodities in the country. Moreover, ongoing innovations in the delivery of health services under Health Sector Reform, (i.e. decentralization, integration and cost recovery/cost-sharing), have an impact on the Six Rights and are thereby affecting availability of products at all points in the health system.

Quantity Required and Quantity to Order

To ensure adequate supply of any product to users at all levels of a logistics system (in this case, the MOH health system), it is not sufficient to order the Quantity Required to meet user demand for one year without taking several other factors into consideration. Donor procurement mechanisms, supplier lead times, current stock levels, product expiration dates, storage capacity, availability and quality of logistics data from the LMIS, reliability of transport, distribution and reorder schedules will all affect the quantities of product needed and the quantities to order at any given time.

Therefore, after estimating annual requirements to meet the expected demand (Quantity Required), the Quantity to Order must also be calculated and should include additional quantities of product to cover supplier lead times and a buffer stock to cover any stock imbalances created by other intervening factors. The Quantity to Order will need to be adjusted over time to accommodate changes in supplier lead times and the influence of other factors on stock levels.

Lead Time

The concept of Lead Time comprises the period of time from preparation of the Requirements Estimation, submission of the Quantities to Order derived from the Requirements Estimation, to budget approval and mobilization of funds, completion of procurement procedures, shipping, customs clearance, and finally reception, inspection, recording and storage in the warehouse until the product is actually available for distribution. Lead Time at lower levels of the system comprises the time required to prepare and submit an order for resupply of product, processing and approval of the quantities to be resupplied, and the time it takes for the product to be packaged, transported, received, recorded and be ready for use at SDPs. This concept of Lead Time usually translates into a much longer period of time than is typically accounted for in many logistics systems and is often the cause of inadequate quantities of product being procured to cover the Lead Time and fill the pipeline.

Buffer Stock
The next step in moving toward full supply is to establish a Buffer Stock which takes into account other factors which may create stock imbalances (see paragraph above on Quantity Required and Quantity to Order). A general rule for establishing Buffer Stock at the central level when no logistics data on consumption and stock levels at any other level of the system is available, is to set the Buffer Stock equal to the quantities of product needed to cover the Lead Time. The quantities needed to cover Lead Time and Buffer Stock are then added to the Quantity Required. And finally, the current Stock on Hand and any Quantities on Order that have not been received yet are deducted to arrive at the Quantity to Order as follows:

\[
\text{Lead Time} = \text{Time in days, weeks or months}
\]

\[
\text{Buffer Stock} = 1 \text{ Lead Time}
\]

\[
\text{Quantity to Order} = (\text{Quantity Required}) + (\text{Lead Time} + \text{Buffer Stock}) - (\text{Stock on Hand} + \text{Quantity on Order})
\]

It is important to note that the quantities of product in stock should not fall below the established Buffer Stock Level at any time in order to avoid shortages and stock outs.

1. HIV Test Kits
   
a. Blood Safety

Background

HIV transmission through blood transfusion is not a major source of HIV infection in Tanzania. HIV prevalence among blood donors is estimated between 9.4% and 10% according to recent epidemiological reports\(^\text{11}\). However, blood safety is a priority area in the national multi-sectoral response to the HIV/AIDS epidemic in Tanzania. Strategies for ensuring safe blood transfusion focus on HIV antibody screening, blood donor selection, prevention of avoidable blood transfusions and quality control in laboratories and blood banks.\(^\text{12}\)

Blood transfusion services are not centralized. There are in total 182 hospitals that provide blood transfusion across the country and maintenance of universal quality is a challenge. Currently it is estimated that 150,000 units of blood are transfused annually.

HIV blood screening is mandatory in all facilities and the Government of Tanzania has demonstrated its' priority by providing HIV test kits for free for this purpose through the National AIDS Control Program. In addition, since 1999, a Rapid Assay Test (Capillus HIV1/2) is stocked at MSD and is available to MSD clients at Tsh 157,000 per kit of 100 tests.

Testing blood donors for HIV is anonymous and is conducted according to WHO Guidelines for selection and use of HIV antibody tests\(^\text{13}\). Rapid Assay HIV tests and ELISA Tests are used for blood testing. In the public sector, 75% of hospitals (mostly district hospitals) use a rapid

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\(^{13}\) WHO/UNAIDS Revised Recommendations for Selection and Use of HIV Antibody Tests. 1997
assay test for blood safety, mainly the “Capillus” HIV1/2. Another rapid test, the “Determine” HIV1/2 finger prick, strip test is being introduced. An orientation and pilot on the use of “Determine” for laboratory technologists at peripheral district hospitals is currently underway.

The ELISA test is used in all regional and consultant hospitals for both blood safety and clinical diagnosis. Occasionally, rapid assay tests are also used at regional and consultant hospitals when blood samples are too small for efficient use of ELISA Test Kits (which require a larger number of tests to use a kit), and immediate results are required.

Although donated blood for transfusions should routinely be tested for Hepatitis B and C, Malaria, and Syphilis as well as HIV antibodies; only HIV testing of donated blood is currently performed in most hospitals for lack of resources. A recent directive from MOH authorities has instructed Consultant Hospitals to initiate screening for Hepatitis B and C, and Syphilis for all donated blood as of June 2001, and all regional hospitals to initiate testing as of December 2001. At this time, the types of testing products to be procured for this purpose and the preparation of MOH laboratory staff to conduct these tests is unclear.

**Testing Guidelines**

For Blood Safety, the current practice according to WHO Guidelines is to conduct an anonymous test of the donor blood sample using a highly sensitive combined HIV-1/HIV-2 ELISA or rapid assay test. If the test result is positive for presence of HIV antibodies, the blood should be discarded according to universal bio-safety precautions. If the test result is negative for HIV antibody, it may be used for blood transfusion.

At the time of testing, the donor is advised that the blood will be tested for HIV antibody. If the blood donor wishes to know the test result, s/he is referred to a Voluntary Counseling and Testing site for counseling and to receive the test results.

**Assumptions**

- Screening for blood safety will remain a priority of government in the national response to HIV/AIDS epidemic and blood screening for HIV antibodies will remain mandatory.
- Screening for blood safety will be limited to HIV antibodies
- Tanzania Mainland Population Estimate for 2001 = 33,984,686
- All 182 hospitals conduct anonymous HIV Testing of blood supply for transfusions.
- Total number Hospitals: Public (91) NGO (56), Private and Other (35)
- Because insufficient data exists to estimate the number of ELISA Vironostika Uniform II HIV1/2 plus 0 tests used to test for Blood Safety at regional and consultant hospitals, vs. number of “Capillus HIV1/2” or “Determine” rapid assay tests used to test for Blood Safety at District Hospitals, for purposes of this quantification, all requirements for HIV tests for Blood Safety have been estimated for “Capillus HIV1/2” Rapid Assay Tests.
- Anually, 6 blood transfusions will be required per 1000 population per year
Each blood transfusion requires on average of 2 Units of blood (children receive \( \frac{1}{2} \) unit and some adults will require more than 2 Units)

Wastage or loss of HIV tests due to expiration, damage, loss, or defective product, laboratory controls, quality testing, training, including HIV tests used for clinical diagnosis is estimated at 15%

Blood transfusion requirements resulting from unexpected events like natural disasters and wars not covered in this estimation

Current estimate of 10% HIV prevalence among blood donors is used

For purposes of this requirements estimation, supplier lead time is assumed to be 1.5 months for local procurement

Stock on Hand and any Quantity on Order will be subtracted from the Quantity to Order at time of procurement

For the purposes of this requirements estimation, Stock on Hand and Quantity on Order are left at zero because of reported shortages and need to verify quantities of HIV Test Kits already procured for Blood Safety as yet to be received

**Steps in Estimation of Annual Requirements for Blood Safety in Public Sector and NGOs**

1. Estimate total population in 2001…………………………………………………………………………………... 33,984,686 A
2. Estimate total number of blood transfusions ( A x 0.006)................................................................. 203,908 B
3. Estimate number Units of Blood required  (B x 2)…………………………………………………………… 407,816 C
4. Estimate number Units of Blood which will be HIV + (C x .10)………………………………………….. 40,782 D
5. Estimated **Quantity Required** of Rapid Assay Tests (C + D)……………………………………………… 448,598 E
6. **Adjusted** Quantity Required for Wastage & Quality Testing (E x 1.15)………………………………… 515,888 F
7. Average Monthly Quantity Required (F/12)……………………………………………………………….. 42,991 G
8. Quantity Required to cover Lead Time of 1.5 months (G X 1.5)………………………………………… 64,486 H
9. Quantity Required to cover Buffer Stock = 1 Lead Time ( I = H)………………………………………… 64,486 I
10. Quantity Required to cover Lead Time and Buffer Stock (J = H + I)…………………………………….. 128,972 J
11. Stock on Hand…………………………………………………………………………………………………… 0 K
12. Quantity On Order…………………………………………………………………………………………… 0 L
13. **Quantity To Order**  (F) + (J) – (K + L) *……………………………………………………………. 644,859 M

\[*Quantity To Order = Adjusted Quantity Required + (Lead Time + Buffer Stock) – (Stock on Hand + Quantity on Order)*

**Cost Estimate**

644,859 “Capillus HIV 1/2 tests @ 100 Tests/Kit = 6,449 Test Kits

“Capillus” HIV 1/2 Test Kits (100/Kit) @ $154.66/Kit X 6,449 Kits = US$ 997,402
(See TABLE 3.1: Estimated Requirements and Cost Estimate for HIV Test Kits and Expendable Medical Supplies for BLOOD SAFETY. TANZANIA July 2001 - June 2002)

b. Voluntary HIV Counseling and Testing (VCT) in public sector

Background

Voluntary HIV counseling and testing present enormous potential for impacting on the spread of the HIV/AIDS epidemic. VCT serves as an entry point to HIV Care and Support by linking individuals, couples and families to available services such as legal, welfare and spiritual support within communities, appropriate medical care services for early management of TB and other opportunistic infections, and other interventions to reduce mother to child transmission. In addition, VCT has proved effective in the reduction of denial and stigma found to constrain the promotion of safer sexual behavior and other health promoting behaviors.

The demand for VCT in Tanzania appears to be high and could be increasing. In a recent survey,\textsuperscript{14} two thirds of men and women of reproductive age reported they would like to know their sero-status. Socio-cultural and economic factors as well as lack of knowledge about where to go for services were reported as constraints hindering utilization of services.\textsuperscript{15}

Voluntary counseling and testing is recognized as a priority in the national response to the HIV/AIDS epidemic\textsuperscript{16} but investment and efforts to provide VCT services in Tanzania to date have been fragmentated and limited in the face of the magnitude of the demand.

Currently, the bulk of counseling and testing services, separately or combined with other services, are provided through a large network of voluntary sector organizations. Counseling without testing is provided in all regions and counseling and testing as a package in only 15 regional hospitals.

In the public sector a VCT pilot project introduced late in 1995 established 110 VCT sites in 85 districts and trained a total of 162 VCT counselors. Lack of funding resulted in irregular and inadequate supply of HIV Test kits and supplies. Currently 59 out of 110 established VCT sites are active and the number of clients is declining. Continuity and quality of the available VCT services through are threatened by lack of resources for project management, human resource development, and an identified source (s) of HIV test kits and supplies needed for testing.

A new initiative supported by USAID and approved by the MOH will initially establish 5 VCT sites in VSOs and public health facilities. The VCT project, to be implemented by AMREF, will provide a range of services including the establishment of standard laboratory guidelines, provision of tests and supplies, training of laboratory technologists and HIV counselors, quality monitoring, and supervision.

Concurrently, a needs assessment for HIV Care and Support services is being conducted for the development of a comprehensive model for HIV Care and Support which can be

\textsuperscript{14} Tanzania Reproductive and Child Health Survey, 1999.
\textsuperscript{15} Tanzania Reproductive and Child Health Survey, 1999.
implemented at the district level. A pilot of the model is envisaged in the VCT sites to be established under the AMREF proposal to provide lessons on how to link VCT and HIV Care and Support services at the district level as a continuum of a comprehensive HIV/AIDS response.

**Testing Guidelines**

According to WHO testing guidelines for conducting HIV testing for Voluntary Counseling and Testing services, blood (serum or plasma) is first tested using an ELISA test or a rapid assay test. Blood that is non-reactive on the first test is considered HIV antibody negative. Any initially reactive results with an ELISA test are retested with a different type of ELISA, any initially reactive results using a rapid assay test are retested using a different type of rapid assay test. If the second test is also reactive, the sample is considered HIV antibody positive. If the first and second tests are discordant, the blood should be tested a third time with the two different assays used in the first and second tests. If the third test results are concordant, i.e. both are reactive or both are non-reactive, the test result is then considered positive or negative respectively. If the two tests on the third try are discordant, then the blood test is considered indeterminate and a second blood sample should be obtained for re-testing. Or, if the appropriate laboratory facilities are available, indeterminate ELISA test results should undergo a Western Blot test.

HIV testing for VCT in the public sector in Tanzania generally follows WHO testing guidelines but the initial HIV test is conducted using the “Capillus” HIV1/2 rapid assay test at VCT sites. Initial non-reactive results are considered HIV antibody negative. Confirmatory testing of reactive results is conducted at regional or consultant hospitals using the ELISA Vironostika Uni-form II HIV1/2 plus 0 test. Concordant results are considered HIV antibody positive.

Discordant results are retested using a different ELISA. If the two ELISA tests are discordant, then the blood test is considered indeterminate and a second blood sample should be obtained for re-testing. Or, if the appropriate laboratory facilities are available, indeterminate ELISA test results should undergo a Western Blot test.

VCT sites require a guaranteed supply of sufficient quantities of rapid assay HIV Test Kits and expendable medical supplies to support same day testing, and regional and consultant hospitals require an adequate supply of ELISA tests for confirmatory testing and restesting of discordant results.

**Cost Estimate for AMREF Proposal**

AMREF needs for HIV Test Kits to enhance same day HIV counseling and testing services over 3 years are estimated at 30,000 Rapid Tests and 12,000 ELISA tests for Confirmatory Testing of HIV antibody positive results. These quantities are estimated by AMREF according to current data on HIV sero-prevalence of VCT clients at 76% and project estimates to lower HIV sero-prevalence to 40% in three years, and include additional quantities needed to conduct Quality Testing of 1 in every 10 negative results and 1 in every 10 positive results. AMREF budget estimates are US $30,000/year totaling US $90,000 for 3 years to cover all HIV Test Kit needs.

**Assumptions**

- Voluntary Counseling and Testing in the public sector will be revived and limited to 110 sites established in 85 districts.
162 already trained VCT counselors will be deployed to support VCT services for 232 days in a year. [52 weeks X 5 = 260 weekdays/year – 28 vacation days]

While 66 % of the population in 85 districts will request VCT, the number of clients a counselor can attend is limited by service constraints and other demands on counselor’s time

100 % of people counseled will request HIV testing

A trained VCT counselor working in the public sector can counsel and test on average 2 clients a day

HIV prevalence among VCT clients is currently estimated as high as 76%

VCT clients will be tested with a rapid test and only positive cases will be confirmed with an ELISA test

Wastage or loss of HIV tests due to expiration, damage, loss, or defective product, laboratory controls, quality testing, training, and HIV tests used for clinical diagnosis are included in the Wastage estimated at 15%

For purposes of this quantification, Supplier Lead Time for HIV test kits is assumed to be 1.5 months for local procurement.

Current Stock on Hand of Capillus Rapid Assay Tests for VCT is zero. Therefore additional quantities of product are required to cover Supplier Lead Time and to fill the pipeline.

ELISA confirmatory testing under VCT will be sourced from the established infrastructure at current market price of about $US 3.00 (2,500 Tsh) per test.

**Steps in Estimation of Annual Requirements for VCT in Public Sector**

1. Estimate of demand (total number potential VCT clients) is 66% of local population..
2. Estimate number of clients that trained counselors can counsel and test annually is 
   \[(162 \times 2 \times 232 \text{ days}) = \text{Quantity Rapid Tests Required} \]  
   \[= 75,168 \]  
   \[\text{A} \]
3. Adjusted Quantity Required for Wastage and Quality testing \((A \times 1.15)\) 
   \[= 86,443 \]  
   \[\text{B} \]
4. Average Monthly Quantity Required \((B/12)\) 
   \[= 7,204 \]  
   \[\text{C} \]
5. Quantity Required to cover Lead Time of 3 months \((C \times 1.5)\) 
   \[= 10,805 \]  
   \[\text{D} \]
6. Quantity Required to cover Buffer Stock = 1 Lead Time \((E = D)\) 
   \[= 10,805 \]  
   \[\text{E} \]
7. Quantity Required to cover Lead Time and Buffer Stock \((F = D + E)\) 
   \[= 21,611 \]  
   \[\text{F} \]
8. Stock on Hand 
   \[= 0 \]  
   \[\text{G} \]
9. Quantity On Order 
   \[= 0 \]  
   \[\text{H} \]
10. **Quantity To Order Rapid Tests** \((B) + (F) - (G + H)\) 
    \[= 108,054 \]  
    \[\text{I} \]
11. Quantity ELISA Tests Required \((A \times .76)\) 
    \[= 57,128 \]  
    \[\text{J} \]
12. Adjusted Quantity Required for Wastage and Quality testing \((J \times 1.15)\) 
    \[= 65,697 \]  
    \[\text{K} \]
13. Average Monthly Quantity Required \((K/12)\) 
    \[= 5,475 \]  
    \[\text{L} \]
14. Quantity Required to cover Lead Time of 3 months \((L \times 1.5)\) 
    \[= 8,212 \]  
    \[\text{M} \]
15. Quantity Required to cover Buffer Stock = 1 Lead Time \((N = M)\) 
    \[= 8,212 \]  
    \[\text{N} \]

*Note: The quantities in the table have been rounded for simplicity.
16. Quantity Required to cover Lead Time and Buffer Stock (O = M + N)………………. 16,424 O
17. Stock on Hand………………………………………………………………………………… 0 P
18. Quantity On Order…………………………………………………………………………… 0 Q
19. Quantity To Order ELISA Tests (K) + (O) – (P + Q) * …………………………….. 82,121 R

* Quantity To Order = Adjusted Quantity Required + (Lead Time + Buffer Stock) – (Stock on Hand + Quantity on Order)

Cost Estimate
VCT in Public Sector
108,054 Capillus Rapid Tests = 1,081 Kits of 100 Tests/Kit
"Capillus" HIV 1/2 Test Kits (100 Tests/Kit) @ US $154.66 per Kit $154.66
(Does not include Expendable Medical Supplies) $167,116

82,121 Vironostika ELISA Tests = 428 Kits of 192 Tests/Kit
ELISA Uniform II Vironostika HIV 1/2 Test Kits (192Tests/Kit) @ US $230.51 per Kit $230.51
(Does not include Expendable Medical Supplies) $98,592

Total Cost Estimate:
Capillus Rapid Assay Tests and Vironostika ELISA Tests for VCT in Public Sector $265,708

AMREF VCT Project Cost Estimate for YEAR 1
10,000 "Capillus" Rapid Assay Tests @ 100 Tests/Kit = 100 Kits
"Capillus" HIV 1/2 Test Kits @ US $154.66 per Kit $154.66
$15,466

4,000 Vironostika ELISA Tests @ 192 Tests/Kit = 21 Kits
ELISA Uniform II Vironostika HIV 1 / 2 Test Kits @ US $230.51 per Kit $230.51
$4,841

Expendable Medical Supplies to support AMREF VCT Project – YEAR 1 $8,807

Total Cost Estimate: “Capillus” Rapid Assay Tests, ELISA Tests, and Expendable Medical Supplies for AMREF VCT Project – YEAR 1 $29,114

(See TABLE 3.2: Estimated Requirements and Cost Estimate for HIV Test Kits and Expendable Medical Supplies for VOLUNTARY COUNSELING AND TESTING. TANZANIA July 2001-June 2002)

c. HIV and Syphilis Sentinel Surveillance

Background
Sentinel surveillance was established with WHO (Global Program of Action) support in 1990. Twenty-four sentinel sites in 11 out of the 20 regions of mainland Tanzania were established in a surveillance population of pregnant women attending Ante-natal Care clinics for the first time in a given pregnancy. Since external support from WHO was discontinued in 1993, all but 3 of the originally established sentinel sites have stopped reporting (Umbwe, Dar es Salaam and Bukoba). After 1993, support for sentinel surveillance continued only in Mbeya region where the number of sentinel sites was increased to 8 with GTZ assistance which ended in 2000.

Ante-natal clinic based sentinel surveillance data indicate prevalence rates for untreated syphilis among pregnant women ranging from 0% to 52% between 1990-1999. Among women in high transmission areas (HTAs) such as truck stops, 24% had a positive syphilis serology, 12% had gonorrhoea, and 30% were infected with chlamydia trachomatis. During 1999, the prevalence of syphilis among women attending ante-natal clinics for the first time during their pregnancy ranged between 0.4% and 32.6%.

HIV prevalence in this sentinel population varied from 7.0% to 29.5% in 1999. Most sites show a stable prevalence among this population during this year with an increasing trend in a few rural sites and a decreasing trend noted in the Bukoba urban site.

Based on the results of an NACP assessment of HIV/STD surveillance activities in 1999/2000, new criteria and guidelines for surveillance were developed as part of a plan to strengthen monitoring and evaluation of HIV/AIDS prevention and care activities in Tanzania. With support from UNAIDS, 24 Ante-natal Care (ANC) surveillance sites in 6 regions will be established for the period 2000-2002. Four sites will be established in each of the six regions selected to include 1 urban, 1 peri-urban/roadside site, and 2 rural ANC sites.

Testing Guidelines

Trained ANC clinic staff using a vacutainer and needle collect venous blood for routine haemoglobin and Syphilis testing from all pregnant women during their first ante-natal care visit. The specimen for HIV testing is taken from the same sample and is sent to a regional laboratory for anonymous, unlinked testing using an ELISA test in accordance with WHO Guidelines for selection and use of HIV antibody tests. Serum/plasma is first tested using one ELISA test (Enzygnost). Serum that is non-reactive is considered HIV antibody negative and no further testing is done. Serum that is reactive undergoes a second ELISA test (Vironostika) based on a different antigen or using a different testing principle. Serum that is reactive on both the first and second ELISA tests is considered HIV antibody positive. Discordant results, i.e. reactive on the first test but not-reactive on the second test, should be retested with the two ELISA tests used. If the two assays remain discordant, the serum is considered “indeterminate” and no further testing is needed. Alternatively, discordant test results may be retested using the Western Blot test if appropriate laboratory facilities are available.

Quality testing of a 10% sample (1:10 positive results and 1:10 negative results) of the surveillance specimens tested in the regional laboratories will be conducted at a designated laboratory.

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17 Dr. G. R. Somi, Epidemiologist, NACP
23 Dr. G. R. Somi, Epidemiologist, NACP
national reference laboratory. Quality testing at the reference laboratory will be conducted twice a year using external control specimens and comparing the reference laboratory test results against the control specimens.

Assumptions

☞ Sentinel surveillance of HIV and Syphilis prevalence in pregnant women attending ANC clinics for the first time during any given pregnancy will be implemented as outlined in the new “Guidelines for Monitoring and Evaluation during Mid-Term III. 2000-2002”

☞ A total of 24 ANC surveillance sites will be established in six regions of mainland Tanzania with 4 sites in each of the six selected regions

☞ The 4 ANC surveillance sites in each region will include 1 urban, 1 peri-urban/roadside site and 2 rural sites

☞ Enrollment of pregnant women attending the selected ANC sentinel sites for a first visit will continue for a period of three consecutive months (July – September) until reaching the desired sample size of 350-400 women per urban and peri-urban/roadside sites and at least 150 women enrollees at the rural sites. (12 urban and peri-urban sites X 400 women each) and (12 rural sites X 150 women each)

☞ Venous blood samples will be collected for Syphilis and haemoglobin testing and the specimen for HIV testing will be taken from this blood sample.

☞ Clinic staff will be trained and provided appropriate protective gear, disinfectant solution and bio-discard bags for blood collection and specimen handling.

☞ Initial HIV and RPR testing will be conducted at designated regional laboratories.

☞ ELISA Enzygnost Anti-HIV 1/HIV 2 plus tests will be used for all initial tests.

☞ ELISA Vironostika HIV Uni-form II plus 0 tests will be used for confirmatory testing and quality testing.

☞ If and when appropriate laboratory facilities are available, a Western Blot test will be conducted on discordant samples from the first and second tests (generally 2% - 5% of second ELISA tests give discordant results).

☞ An average HIV prevalence of 16% within this sentinel population is expected based on prevalence data from 19 ANC sites that reported in 1999. The highest and lowest outliers (29.5% and 7.0% respectively) were removed and the average was calculated from the HIV prevalence rates reported in the remaining 17 ANC surveillance sites.24

☞ An average Syphilis prevalence of 8.5% within this sentinel population is expected based on prevalence data from 20 ANC sites that reported in 1999. The highest and lowest outliers (32.6% and 0.4% respectively) were removed and the average was calculated from the Syphilis prevalence rates reported in the remaining 18 ANC surveillance sites.25

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Quality testing will be conducted on 1 out of every 10 positive HIV results and on 1 out of every 10 negative HIV results from the batch of specimens from each ANC sentinel site. This means there will be 24 batches, one for each surveillance site, from which to select 1 in 10 positive results and 1 in 10 negative results for quality testing. (12 batches of 400 specimens each from urban and peri-urban sites, and 12 batches of 150 specimens each from rural sites).

A wastage factor of 15% for loss of ELISA tests due to inadequate sample size at the testing facility, expiration, damage, loss or defective product, laboratory controls, quality testing, training and clinical diagnosis will be applied to adjust the Quantities Required of ELISA tests.

Quality testing of the RPR test results include a repeat RPR test of 10% of the sample size, i.e. 1 in 10 sero-reactive results and 1 in 10 sero-non reactive results will be selected for Quality Testing.

A wastage factor of 15% for loss of RPR tests due to expiration, damage, loss or defective product, laboratory controls, quality testing, and training will be applied to adjust the Quantities Required of RPR tests.

**Steps in Estimation of Requirements for HIV tests and RPR tests for 3 month Sentinel Surveillance Period**

1. Number of Regions where ANC Sentinel Surveillance sites to be established.............. 6 A
2. Type and number of ANC Sentinel Surveillance Sites per Region ........................................ .......................... 6 B
   - 1 Urban site per Region = (A x 1) = 6 Urban ANC sites .......................... 6 C
   - 1 Peri-urban/roadside site per Region = (A x 1) = 6 Peri-urban/roadside /ANC sites ...... 6 C
   - 2 Rural sites per Region = (A x 2) = 12 Rural ANC Sites .......................... 6 C
3. Total number of ANC Sentinel Surveillance Sites = (B + C + D) .......................... E
4. Number of Enrollees per ANC Surveillance site .................................................. 2,400 F
   - 400 Enrollees per Urban site = (B x 400) .......................... 2,400 F
   - 400 Enrollees per Peri-urban/roadside site = (C x 400) .......................... 2,400 G
   - 150 enrollees per Rural site = (D x 150) .......................... 1,800 H
5. Total Number of Enrollees from all 24 ANC Sentinel Surveillance Sites = (F + G + H) .......... 6,600 I
6. Estimated Quantity Required of ELISA tests (Enzygnost) for initial HIV testing = (I x 1) .... 6,600 J
7. Adjusted Quantity Required ELISA (Enzygnost) tests for Wastage/Quality Testing = (J x 1.15) .......... 7,590 K
8. Estimated number of HIV positive tests given prevalence of 16% = (J x 0.16) .................... 1,056 L
9. Estimated number of ELISA tests (Vironostika) for Confirmatory testing of HIV positive test results = (M = L) .................... 1,056 M
10. Adjusted Quantity Required ELISA (Vironostika) for Wastage/Quality Testing = (N = M x 1.15) .......... 1,214 N
11. Estimated Quantity Required of RPR tests for initial Syphilis test = (I x 1) .................... 6,600 O
12. Adjusted Quantity Required of RPR tests for Wastage/Quality Testing = (L x 1.15) ........... 7,590 P
13. Estimated Number of sero-reactive RPR tests given prevalence of 8.5% = (O x 0.085) = 561 Q
14. Estimated Number of TPHA tests for Confirmatory testing of sero-reactive RPR test results (R = Q) = 561 R
15. Adjusted Quantity Required of TPHA tests for Wastage/Quality Testing (S = R x 1.15) = 645 S

Cost Estimate

Final Quantities to Order of Enzygnost and Vironostika Uniform II ELISA tests, and RPR Syphilis Antigen Tests have been adjusted according to Unit Size for procurement.*

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,590 Enzygnost HIV 1/2 plus ELISA tests @ 192 Tests/Kit = 40 Kits</td>
<td>40</td>
<td>$250.84 per Kit</td>
<td>$10,034</td>
</tr>
<tr>
<td>Enzygnost HIV 1/2 Test Kits @ US $250.84 per Kit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,214 Vironostika Uniform II HIV 1/2 plus 0 tests @ 192 Tests/Kit = 7 Kits</td>
<td>7</td>
<td>$230.51 per Kit</td>
<td>$1,614</td>
</tr>
<tr>
<td>Vironostika Uniform II HIV 1/2 plus 0 Test Kits @ US 230.51 per Kit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7,590 RPR Syphilis Antigen Tests @ 100/Kit = 76 Kits</td>
<td>76</td>
<td>$10.00 per Kit</td>
<td>$760</td>
</tr>
<tr>
<td>RPR Syphilis Antigen Tests @ US $10.00 per Kit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expendable Medical Supplies to support HIV and Syphilis Sentinel Surveillance</td>
<td></td>
<td></td>
<td>$2,585</td>
</tr>
<tr>
<td><strong>Total Cost Estimate:</strong></td>
<td></td>
<td></td>
<td><strong>$14,992</strong></td>
</tr>
<tr>
<td>(does not include TPHA tests for Confirmatory testing of sero-reactive RPR test results)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


2. Syndromic Management of STDs
Background

Prevention, detection and treatment of sexually transmitted diseases (STDs) has received priority with the advent of the human immunodeficiency virus. Numerous epidemiological and biologic studies have established STDs, both ulcerative and non-ulcerative enhance HIV transmission. In addition it appears HIV alters the natural history of some STDs. In a recent community-based, randomized trial in Mwanza, treating of STD-symptomatic individuals using the syndromic approach reduced HIV incidence in the study population by 42 percent.

Reliable data on the prevalence of STDs in Tanzania is limited. The Ministry of Health however estimates between 1.0 and 1.5 million people suffer from STDs such as gonorrhoea, syphilis and chancroid annually.

Implementation of STD control activities under the auspices of NACP has been sporadic and limited in coverage. Relatively large scale STD control activities have been supported by the European Development Fund (EDF), GTZ and DFID. With European Development Fund (EDF) support, STD control activities were initiated in 23 urban sites between 1996 and 2000 and later expanded to cover more facilities in 12 out of the 20 regions.

Limited to public health facilities, the European Development Fund (EDF) support covered all hospitals and health centres and 50% of dispensaries. In addition, 101 sites were supported along the major highways in what are considered to be High Transmission Areas HTAs).

Additionally; STD activities were initiated in Mbeya region under the support of GTZ in 1988 and DFID in 1994. The European Development Fund (EDF) support came to an end in June 2000 and a new proposal has been submitted for an extension of support to fund STD drugs for an additional year. In the meantime MSD has made a one time procurement of STD drugs from a remaining balance of project funds under the European Development Fund (EDF) support. The GTZ project likewise will come to an end in mid 2002. The Mbeya Family Health Project ended in 1999. An eighteen month extension is coming to an end in December 2001.

For lack of adequate laboratory support services outside hospital settings, STDs are diagnosed and treated syndromically. Outside STD project support areas, STDs are treated using drugs from the essential drug kit supplied monthly to health centers and dispensaries. Original estimates of numbers of STD syndromes to have been treated appear to have fallen short for inadequate supply of drugs and medical supplies.

Additional funding and management support will be needed to increase and improve monitoring and supervision of STD control and prevention activities in the regions and districts.

Assumptions

26 Gina Dallabetta et al (editors) Control of Sexually Transmitted Diseases. A Handbook for the Design and Management of Programs
30 Ministry of Health National AIDS Control Programme, A Proposal For Belgian Funds for the Purchase Drugs and Other Medical Supplies For the Prevention and Control of Sexually Transmitted Diseases in Tanzania January 2000
31 B.Jordan-Harder et al Reason for Hope. AIDS Control and Prevention in Mbeya, Tanzania
STD Control and Prevention Activities

- Syndromic diagnosis and treatment of STDs will remain a priority in the national response to the HIV/AIDS epidemic 32.
- The proposal submitted to the EDF will be approved to cover the STD drug needs for the next one year in the 12 regions where STD services have been established 33.
- Management and supervision of STD control and prevention activities under the project will be strengthened in the 12 regions in mainland Tanzania.
- There will be an increasing demand for STD services arising from IEC activities promoting HIV/AIDS/STDs prevention and care.
- With an improved supply of drugs, reagents and medical supplies, coverage of STD services and number of STD cases detected and treated will increase.
- While evidence exists to the contrary, for the purposes of this drug quantification exercise, it is assumed that STD drugs provided through NACP STD Control and Prevention activities are used for syndromic management of STDs only.

Population and STD Prevalence Data

- Total mainland population for 2001 is estimated at 33,984,686 34.
- The Ministry of Health estimates total number of STD cases per year in Tanzania at 1.2 – 1.5 million while recognizing that large data gaps exist 35.
- Therefore, current prevalence of STDs in the general population 36 can be estimated at 4.4%:
  \[
  \frac{1,500,000}{33,984,686} = 0.044
  \]
- Estimated population for 2001 in the 12 regions covered by STD control and prevention activities is 22,771,279 37.
- Therefore, the target population for STD services in the 12 regions is 4.4% of the 2001 population estimated to be infected with STDs:
  \[
  22,771,279 \times 0.044 = 1,001,936
  \]

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33 “Proposal for the Belgium Funds for the Purchase of Drugs and Other Medical Supplies for Prevention and Control of Sexually Transmitted Diseases in Tanzania” September 2000
34 MOH, Health Statistics Abstract, 1999
35 NACP Report No. 14, Dec. 1999
36 The proportion of population that are men and women of reproductive age 15 – 49 years old is estimated at 41.8% (TRCHS 1999 pg.9). Therefore, the population of men and women of reproductive age in the 12 regions in 2001 can be estimated at: 22,771,279 \times 0.418 = 9,518,395. However, while the majority of STD infection occurs in men and women of reproductive age 15 – 49, men in Tanzania are considered sexually active between 49 – 59 years old, and young adolescents in Tanzania are at particularly high risk for STD and HIV transmission. Therefore, the general population figure is used to calculate the target population for STD control and prevention activities in the 12 regions.
37 MOH Health Statistics Abstract, 1999
Of these, an estimated 72% [verify this figure with Dr. Nyang'anyi again] will receive syndromic treatment in public sector health facilities of the 12 regions covered by the project: \[ 1,001,936 \times 0.72 = 721,394 \]

STD Syndromes

The proportional distribution of STD syndromes in Tanzania, while recognized to vary significantly by region, is estimated at:

<table>
<thead>
<tr>
<th>STD Syndrome</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal Discharge Syndrome (VDS)</td>
<td>30%</td>
</tr>
<tr>
<td>Urethral Discharge Syndrome (UDS)</td>
<td>30%</td>
</tr>
<tr>
<td>Genital Ulcer Syndrome (GUS)</td>
<td>20%</td>
</tr>
<tr>
<td>Pelvic Inflammatory Discharge (PID)</td>
<td>20%</td>
</tr>
</tbody>
</table>

The quantities of drugs required to treat patients by STD Syndrome generally follow the Algorithm for Syndromic Management of Sexually Transmitted Diseases in Tanzania \(^{38}\) with some adjustments in alternative regimens in response to reported drug resistance.

Other STD related infections which are treated syndromically in Tanzania include Neonatal Conjunctivitis, Painful Scrotal Swelling, Balanoposthitis and others including Genital Warts. (See Table 6:).

Unsuccessful first line treatment of STD syndromes will be re-treated at 2\(^{nd}\) and 3\(^{rd}\) visits according to standard treatment regimes for drug sensitivity/resistance and after screening patients for non-compliance and re-infection.

The Quantity Required of each drug, laboratory test, reagent or medical supply reflects the number of each drug or product needed to treat all patients diagnosed with STDs during one year, including quantities to cover Quality Testing and Wastage.

The Quantity to Order of each drug, laboratory test, reagent or medical supply estimated for the year July 2001- June 2002 is adjusted to reflect existing supplier Lead Times, additional quantities of Buffer Stock needed for each drug or product, current Stock on Hand, and any Quantities on Order expected to be received.

For the purposes of this quantification, current Stock on Hand is assumed to be zero given reported shortages and stock-outs.

Steps in Estimation of Annual STD Drug Requirements

\(^{38}\) “Syndromic Management of Sexually Transmitted Diseases (STDs), National AIDS Control Programme NACP Ministry of Health, Tanzania. Developed and printed with support of the European Development Fund (EDF), 1998 Also, NACP, STD Control and Prevention Program, Standard Treatment Guidelines
1. Total population estimate for 2001…………………….. 33,984,686 A
2. Estimated number of STD Cases /year…………………… 1,500,000 B
3. Estimated prevalence of STDs (B/A)………………………….. 0.044 C
4. Estimated population in 12 Regions in 2001………………… 22,771,279 D
5. Estimated Target Population in 12 Regions (D x .044)……….. 1,001,936 E
6. Estimated Total Number of STD cases Treated Syndromically in Public Sector Health Facilities (E x .72)……………….. 721,394 F
7. Percentage and Number of STD cases by syndrome ………... G
   Female Vaginal Discharge Syndrome (VDS) = (F x.30)……… 216,418 G1
   Male Urethral Discharge Syndrome (UDS) = (F x.30)……… 216,418 G2
   Pelvic Inflammatory Disease (PID) = (F x.20)………………. 144,279 G3
   Genital Ulcer Syndrome (GUS) = (F x .20)…………………. 144,279 G4

**Quantities Required**

The Quantities Required of each Drug, and the Expendable Medical Supplies needed to treat the number of cases estimated for each Syndrome, are calculated according to the Standard Treatment Guidelines and the Algorithm for Syndromic Management of STDs in the attached “TABLE 6: Estimated Requirements for STD Drugs, Laboratory Tests, Reagents and Expendable Medical Supplies for TANZANIA. July 2001 – June 2002”.

8. Quantity Required (G x Drug Regimen) ……………………. H
9. Quantity Required Adjusted for Losses/Wastage (H x 1.10) =________ I
10. Average Monthly Quantity Required (I /12)…………………. J
11. Quantity Required to cover Lead Time of 3 months (J x 3)……… K
12. Quantity of Buffer Stock = 1 Lead Time (K = L)……………….. L
13. Quantity Required to cover Lead Time + Buffer Stock (K+L)…… M
14. Stock on Hand (0)…………………………………………………….. N
15. Quantity on Order (0)……………………………………………… O
16. Quantity to Order = (I) + (M) – (N + O)*………………………… P

\* Quantity To Order = Adjusted Quantity Required + (Lead Time + Buffer Stock) – (Stock on Hand + Quantity on Order)

**Summary of Adjusted STD Drug Requirements, Quantity to Order and Cost Estimate**

Review of the above population and morbidity-based estimate of requirements for STD drugs with NACP STD Program staff and the external STD technical advisor determined that the projected number of STD syndromes to be treated in 2001 was highly overestimated. The current volume of STD services is severely constrained by limitations in human resource capacity and weak program management, monitoring and supervision systems. The original population and morbidity-based estimates of demand were adjusted by consensus to more realistically reflect the total number of STD Syndromes to be treated in FY 2001-2002 and to include initiation of STD services in the remaining 8 regions of the country. Thus, the total number of STD syndromes to be treated in FY 2001–2002 was reduced to 392,000 cases and the STD drug requirements were adjusted accordingly.
The adjusted Estimated Requirements, Quantity to Order and Cost Estimates for the STD Drugs, Laboratory Reagents and Expendable Medical Supplies needed are calculated and summarized in the following tables attached in Appendix E:

See TABLE 6: Estimated Requirements for STD Drugs and RPR Syphilis Antigen Tests for TANZANIA. July 2001 – June 2002;

See TABLE 7: QUANTITY TO ORDER: STD Drugs, Laboratory Tests and Reagents, Expendable Medical Supplies, TANZANIA. July 2001 – June 2002;

See TABLE 8: Summary COST ESTIMATE for STD Drugs, Laboratory Tests and Reagents, Expendable Medical Supplies for TANZANIA. July 2001 – June 2002

Summary Cost Estimate

Cost Estimate for STD Drugs = $566,551  
Cost Estimate for Laboratory Reagents and Medical Supplies = $172,513  
TOTAL COST ESTIMATE = $739,065

3. Syphilis Screening and Treatment in Ante-natal Care Clinics

Background

The presence of STIs in general, and Syphilis particularly, is a major predisposing factor in increased risk of HIV infection. Women are also more at risk for contracting STIs than men given that transmission from man to woman is more efficient, and women are less likely to seek and receive adequate treatment. Diagnosis and treatment of Syphilis is further complicated by the fact that Syphilis infection may remain asymptomatic for long periods of time. The added burden of untreated maternal Syphilis includes spontaneous abortion, stillbirth, prematurity, and congenital syphilis in newborns.

Detection and treatment of Syphilis is critical to reducing the incidence of Syphilis and transmission of HIV. Syphilis screening for all pregnant women attending Ante-natal Clinics for the first time during any pregnancy is the official policy of the Government of Tanzania. Utilization of ante-natal care services is reportedly very high, about 90 percent of pregnant women access ante-natal care services at least once during pregnancy. Results of a recent survey show that almost all pregnant women in Tanzania (98%) receive ante-natal care. This presents a unique opportunity for detecting and treating Syphilis infection on a large scale and for reducing transmission of HIV.

A capacity to screen for syphilis using a rapid test (RPR) - Rapid Plasma Reagin Syphilis Antigen Test - has been created in an extensive network of MOH health facilities providing MCH services. Benzathine Penicillin 2.4 million IU given intramuscularly is the recommended drug for treatment of adults with sero-reactive RPR test results.

Partner notification, treatment and dispensing of condoms are also critical interventions for stopping the spread of syphilis and reducing risk of HIV infection and have been incorporated.

into the protocol for treatment of syphilis in pregnant women. The numbers of reported STD cases including syphilis that have been treated through partner notification is low indicating that this aspect of the STD program needs strengthening.\textsuperscript{40}

Historical shortages of RPR test kits have impacted on the investment made in training as currently, laboratory testing for syphilis is only performed in some public sector health facilities in the 12 regions covered by the national STD program and in designated sentinel surveillance sites. Recent STD Program plans include expansion to provide Universal Syphilis Screening of pregnant women attending ANC clinics in all 20 regions of the country during FY 2001-2002.

Apart from syphilis screening at ante-natal care clinics, syphilis cases are diagnosed and treated syndromically as “Genital Ulcer Syndrome” when drugs are available at health facilities in the 12 regions covered by the STD Program. Syndromic diagnosis and treatment of syphilis may only touch the tip of the iceberg as men and women infected with syphilis may remain asymptomatic for long periods of time during which they may infect others and are at heightened risk of contracting HIV.

Testing

RPR Syphilis Antigen test for syphilis serology has been used in Tanzania for testing in the public sector. The test is simple and trained nurses and MCH aides providing MCH services in health centers and dispensaries perform it. Nonetheless, quality assurance for syphilis testing conducted by non-laboratory personnel is a challenge. The “Determine” finger prick test for Syphilis is a new test available on the market which does not require refrigeration. The use of “Determine” for Syphilis Screening is yet to be introduced in the public sector.

Assumptions

- Screening for syphilis will remain a priority in the national response to the HIV/AIDS epidemic
- Routine syphilis testing will be expanded to all 20 regions of the country to be offered in 100% of ANCs for all pregnant women at first visit
- One RPR or “Determine” Syphilis test is required for each test conducted
- 4% of general population or 20% of Women of Reproductive Age (WRA) are pregnant in a year
- Wastage or loss of RPR tests due to expiration, damage, loss, or defective product, laboratory controls, quality testing and training is estimated at 15%
- For purposes of this quantification, Supplier Lead Time is assumed to be 3 months for local procurement
- Current Stock on Hand is assumed to be zero given shortages and stock-outs which have limited Syphilis screening in ANC clinics. Therefore additional quantities of product are required to cover Supplier Lead Time and to fill the pipeline

\textsuperscript{40} From consultants review of 2000 Monthly STD Reports.
Steps in Estimation of Annual Requirements of RPR Syphilis Antigen tests for Universal Syphilis Screening of Pregnant Women in Ante-natal Care clinics

1 Total Population estimate for 2001……………………………… 33,984,686 A
2 Percent of general population pregnant in 1 year (A x .04) 1,359,387 B

OR
1 Total Population estimate for 2001……………………………… 33,984,686 A
2 Estimate Population of reproductive age 15-49 (A x .418)…… 14,205,599 B
3 Estimate of number of Women Reproductive Age (B x .525) 7,457,939 C
4 Estimate number of WRA pregnant in 1 year (C x .20)……… 1,491,587 D
5 Estimate pregnant women attending ANC (D x .90)…………… 1,342,428 E
6 Quantity of RPR Tests Required (E = F)………………….. 1,342,438 F
7 Quantity Required Adjusted for Losses/Wastage (F x 1.10)…. 1,476,671 G
8 Average Monthly Quantity Required (G/12)………………….. 123,056 H
9 Quantity Required to cover Lead Time of 3 months (H x 3)….. 369,168 I
10 Quantity of Buffer Stock = 1 Lead Time (I =J)……………….. 369,168 J
11 Quantity Required to cover Lead Time + Buffer Stock (I + J).. 738,336 K
12 Stock on Hand ………………………………………………… 0 L
13 Quantity on Order ……………………………………………… 0 M
14 Quantity to Order = (G) +(I + J) – (L + M)*………………….. 2,215,007 N

* Quantity To Order = Adjusted Quantity Required + (Lead Time + Buffer Stock) – (Stock on Hand + Quantity on Order)

Summary of Adjusted RPR Syphilis Antigen Test and Syphilis Drug Requirements, Quantity to Order, and Cost Estimate

Review of the above population and morbidity-based estimate of requirements for RPR Syphilis Antigen tests and drugs for Syphilis treatment with NACP STD Program staff and the external STD technical advisor determined that the projected number of pregnant women to be screened in 2001 was also highly overestimated. The current volume of Syphilis screening services as part of the STD Program is also severely constrained by limitations in human resource capacity and weak program management, monitoring and supervision systems. The original population and morbidity-based estimates of demand were adjusted by consensus to more realistically reflect the total number of pregnant women to be screened in FY 2001-2002 and to include initiation of Universal Syphilis Screening in the remaining 8 regions of the country. Thus, the total number of pregnant women to be screened in FY 2001–2002 was reduced to 200,000 and the quantities of RPR Syphilis Antigen tests and drug requirements for Syphilis treatment were adjusted accordingly.

The adjusted Estimated Requirements, Quantity to Order and Cost Estimate for RPR Syphilis Antigen tests, drugs for Syphilis treatment, and expendable medical supplies needed are calculated and summarized in the following tables attached in Appendix E:
See TABLE 9: QUANTITY TO ORDER and COST ESTIMATE for RPR Tests and Drugs for Syphilis Screening and Treatment of Pregnant Women at First Ante-natal Care Visit;


Summary Cost Estimate

1. RPR Syphilis Antigen Tests @ U.S. $10.00/Kit
   100 Tests/Kit
   3,150 RPR Test Kits of 100 Tests/Kit = US $31,500

   Expendable Medical Supplies for RPR Testing = US $96,814

   Total Commodity Cost Estimate for Syphilis Screening with RPR = US $128,314

2. Total Commodity Cost Estimate for Drug Treatment of Syphilis Cases detected via RPR Screening = US $16,110

3. GRAND TOTAL COST ESTIMATE
   Syphilis Screening (RPR) = US$ 128,314
   Syphilis Treatment = US$ 16,110
   GRAND TOTAL = US $ 144,424

4. Public Sector Condoms

Background

Public sector condoms for Family Planning and HIV/STI prevention are procured by UNFPA and stored at MSD. Condoms for Family Planning are distributed to Districts by MSD along with contraceptives, essential drugs and vaccines, and are dispensed to users for free at MOH health facilities by the nurse/midwife. Condoms for HIV/STI prevention are distributed by NACP to Districts using NACP vehicles, and then to the same health facilities by the District AIDS Control Coordinator where they are dispensed for free by the Clinician. These parallel distribution systems are duplicating the resources needed for transportation since MSD has the capacity to include condoms for HIV/STI prevention in the delivery of other commodities to Districts. Earlier recommendations to rectify this situation and optimize resources by integrating condom distribution to MOH health facilities have as yet to be acted upon. It was also recommended that condom consumption and stock levels for Family Planning and HIV/STI purposes at health facilities be reported together through the existing LMIS for contraceptives (the "Report and Request" form), so that resupply to the health facility would be based on total consumption of condoms at the health facility, not just for Family Planning. Additionally, it was suggested that this would free up District AIDS Control Coordinators to concentrate on IEC activities to stimulate demand and increase distribution of condoms exclusively to non-clinical sites, e.g. bars, brothels, and restaurants.41

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41 “Situational Assessment of Logistics Systems for Public Health Commodities at Selected Districts and SDPs in Tanzania.” Final Report, September 2000. Pg. 28
Estimation of Requirements and Cost Estimate for Public Sector Condoms

Condom requirements for Family Planning and HIV/STI prevention are estimated using the PipeLine software at RCHS which manages logistics data on all contraceptives for forecasting and procurement planning purposes. The actual quantities of condoms needed comes directly from the PipeLine reports and is only as accurate as the quality and timeliness of the data that is entered into the software. Although reporting rates to RCHS via the “Report & Request” form are high, consumption and stock level data on all contraceptives including public sector condoms distributed through MOH health facilities has not been updated in PipeLine at the central level since June 2000.42

Data on distribution of condoms for HIV/STI prevention by NACP is available at the central level (condoms dispatched to Regions and Districts by NACP) but information on the quantities actually distributed to health facilities and non-clinical sites (e.g. bars, brothels, restaurants) and stock levels remaining in Districts is not available.

Potential Public Sector Condom Shortfall

UNFPA funding for procurement of public sector condoms for Tanzania has become uncertain and could lead to a potential shortfall in condoms late in calendar year 2001. Procurement of condom requirements for Family Planning and HIV/STI Prevention in Tanzania had been planned to meet demand for 2001 – 2003 with the quantities to be procured in 2001 sufficient to fill the supply pipeline and ensure full supply of condoms for Family Planning and HIV/STI prevention at all levels of the MOH health system and meet demand for distribution to non-clinical sites by NACP. Funding for outyears 2002 and 2003 was then planned to refill the pipeline in response to annual consumption needs.

The current unresolved funding source for public sector condom procurement leaves the following gaps for condom supply in Tanzania:

Year 2001 Condom Requirements = 50 million condoms

10 million condoms received April 2001 (funded)
(4 month delay in shipment which had been planned for January 2001)

20 million condoms to be shipped June 2001 (pending)
(shipments had been planned for 10 million to be received in February and 10 million in May)

20 million condoms (unresourced)
(shipments planned for 10 million to be received in August and 10 million in October)

Year 2002 Condom Requirements = 30 million condoms (unresourced)

Year 2003 Condom Requirements = 30 million condoms (unresourced)

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42 JSI/DELIVER and RCHS “PipeLine” database, TANZANIA
Total Condom Requirements currently unresourced for 2001 – 2003 = 80 million condoms

Total Cost Estimate = Approximately U.S. $2,969,250


D. Logistics System Capacity: Issues and Challenges

Introduction
Many issues have been identified regarding the capacity of the logistics systems in Tanzania for managing the HIV/AIDS commodities examined throughout this report. These include program management issues, pending MOH and donor funding commitments, current human resource capacity, existing infrastructure, the political, legal and regulatory environment for drug management, and multiple logistics system implications that the procurement and distribution of these commodities will entail. The key findings on the logistics issues and challenges affecting the commodities needed to support the selected HIV/AIDS interventions are discussed below.

1. Logistics Management Information Systems (LMIS)

No logistics data for monitoring consumption and stock levels of HIV/AIDS and STI commodities at MOH health facilities is collected and used with the exception of public sector condoms. MSD stock balances and distribution data exists at the central level, but the actual quantities of HIV test kits, STI drugs, RPR Syphilis Antigen tests and expendable medical supplies being used and stock positions at MOH health facilities cannot be verified.

Although a form for collecting logistics data on STI drugs dispensed-to-users, stock-on-hand, and for calculating quantities to order exists at MOH health facilities, namely the “Recording/Ordering Form for STD Drugs” Form 6.7, these forms have fallen into disuse and currently serve as a simple requisition form without reporting any logistics data. A review of these completed forms submitted by Districts to NACP revealed that MOH health facilities typically stock out of STI drugs before reordering.

2. Forecasting and Requirements Estimation

Forecasting of needs for HIV test kits, STI drugs, RPR Syphilis Antigen tests and expendable medical supplies is based on rough estimates of numbers of units of blood to be tested, numbers of people that will request VCT, number of syndromes to be treated, or numbers of pregnant women attending ANC clinics. Most often this information is outdated or underestimates demand because of underreporting or services that have been restricted by lack of HIV test kits, laboratory reagents and supplies.

Currently, estimates of HIV/AIDS commodities to be procured does not take into account any additional quantities needed to ensure full supply, i.e. to cover lead times and buffer stock to avoid shortages and stock outs, nor the current stock on hand and quantities already on order.

The methodology for estimating requirements for STI drugs generally follows current standard treatment guidelines and the algorithm for syndromic management of STIs for forecasting, but also neglects to take into account the quantities of drugs needed to cover lead times and buffer stock to ensure full supply, and the stock-on-hand and quantities on order that may need to be discounted in the requirements estimation.

Forecasting of HIV/AIDS and STI commodities is short term and limited to one year at a time that donors are able to commit funds for procurement with the exception of public sector condoms for which forecasts to fill the pipeline and ensure full supply through the year 2003 have been prepared although funding is still pending. Short term forecasting and year to year funding of commodities precludes the ability to make projections of future need and to undertake long term financial planning.

3. Procurement
In an environment of scarce financial resources and heavy dependence on donors for funding, the quantities of HIV/AIDS and STI commodities actually procured is budget driven rather than based on the forecasts of need or estimation of requirements to meet full supply thereby perpetuating the situation of shortages, stock-outs and constant rationing.

Delays in procurement and shipping has also caused occasional shortages.

Parallel sources of procurement have occurred leading to inefficient use of resources and wastage of product.

HIV test kits, STI drugs, laboratory reagents and expendable medical supplies are currently locally procured. Most donor and MOH funding for these products is provided to MSD for procurement, distribution and storage.

Since funding for procurement of HIV/AIDS commodities is insufficient, program managers are obliged to patch together piecemeal funding from different donors and the MOH to cover program needs.

4. Storage and Distribution

MSD provides storage and distribution of HIV test kits, RPR Syphilis Antigen tests and expendable medical supplies as far as the zonal warehouses and for some products, to Districts. HIV test kits for Blood Safety may be collected directly from MSD or from a small stock kept at NACP by District and NGO hospitals. MSD storage and distribution capacity for HIV test kits, RPR Syphilis Antigen tests and expendable medical supplies appears adequate to meet current demand although the consultants were not able to visit Service Delivery Points, i.e. MOH or NGO hospital laboratory testing sites or ANC clinics outside Dar es Salaam, and it could not be ascertained from the central level if routine monitoring and supervision of storage conditions for these products at MOH health facilities takes place.

Storage and distribution of HIV test kits and RPR Syphilis Antigen Tests is particularly important because of the short shelf life (12 and 11 months respectively) of the HIV and RPR test kits currently in use in Tanzania and for those types of test kits which require continuous refrigeration.

Parallel distribution systems exist which duplicate efforts and cause inefficient use of resources (e.g. NACP and MSD distribution of public sector condoms to MOH health facilities; essential drugs and STI drugs are distributed to same health facilities through two vertical systems). Storage and distribution of STI drugs currently remains vertical although plans in September 2000 were to integrate these functions with the essential drugs system which is more reliable for ensuring availability of drugs at MOH facilities. Nonetheless, storage capacity and conditions for essential drugs and STI drugs is inadequate at District and health facility levels and should be improved as recommended, especially if planning to expand drug supply to those levels.

See Appendix F: Distribution of Commodities and Flow of Information: STD Drugs, Laboratory Reagents and Expendable Medical Supplies. TANZANIA [as of January 2001].

Under the indent system of cost recovery currently being piloted in the Morogoro region, the management of essential drugs and STI drugs at SDPs will be integrated under a cash and

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43 “Situational Assessment of Logistics Systems for Public Health Commodities at Selected Districts and SDPs in Tanzania.” Pg. 38 Final Report, RCHS. September 2000

44 “Situational Assessment of Logistics Systems for Public Health Commodities at Selected Districts and SDPs in Tanzania.” Pg. 12 Final Report, RCHS. September 2000
carry system and the essential drug kits will no longer be used. Drugs will be ordered according to a requisition or "pull" system whereby the quantities needed for each drug will be calculated by each health facility. This will have consequences for the packaging and distribution capacity at MSD if it is implemented nationwide as the 57 items in the essential drugs kit will need to be packed according to the quantities needed for each drug instead of as a predetermined quantity of each drug in the kit.

5. Inventory Control Systems

While a “Maximum/Minimum” inventory control system to ensure full supply of contraceptives including condoms has been implemented by RCHS, there is no standardized inventory control system within the MOH health system for managing stock levels of other HIV/AIDS commodities to avoid or reduce overstocking, shortages and stock-outs, and for accurately calculating quantities to order for resupply and procurement purposes. Routine procedures for inspecting and verifying product quality, monitoring expiration dates and conducting and reporting physical inventory counts are not carried out.

Inventory control management of HIV test kits is particularly challenging because of the short shelf life (12 months) of most HIV test kits currently available. While MSD stores and distributes the HIV test kits efficiently, there is no mechanism for monitoring inventory management of HIV/AIDS commodities to avoid losses of product due to expiry or damage at MOH health facilities lower down in the pipeline.

It should be noted here that while “full supply” may not be feasible for some commodities, certain acceptable levels of “minimum supply” may be achieved for selected products that are prioritized within the MOH health system, as is the case with TB drugs.

6. Human Resource Capacity/Service Provision

Under Health Sector Reform, the responsibility for management and provision of health services is being devolved to Districts thereby increasing the burden on existing human resource capacity. HIV/AIDS prevention and care activities are District-based which implies that management of the supply chain for HIV/AIDS commodities will also need to be strengthened at the District level.

New types of HIV tests and new technologies for HIV testing are being introduced as rapidly as the virus mutates; the implications of confidentiality, privacy and informed consent for VCT; emerging drug resistance to STI treatment regimens and the need to revise treatment protocols and procure replacement drugs; new anti-retroviral drugs for treatment of PLWHAs and preventing Mother-to-Child-Transmission; the provision of community based HIV Care and Support services; and Home Based Care for AIDS patients are all evidence of the changing and growing need for services to meet the HIV/AIDS pandemic and represent the tip of the iceberg when considering the demand on human resources for services and the increased supply of the HIV/AIDS commodities needed to support these services.

HIV testing of 100% of donated blood for transfusions and expansion of Voluntary HIV Counseling and Testing services within MOH facilities is constrained by the current shortage of HIV test kits, expendable supplies and laboratory equipment, and lack of certified laboratory technologists and HIV counselors, especially at the health center and dispensary levels.

Verification of provider level of proficiency in HIV testing and validity of HIV test results is often not conducted because of shortages of HIV test kits. Quality assurance is further compromised
by insufficient training and irregular monitoring and supervision of clinical and laboratory staff in health facilities.

Hospital-based health workers are particularly at risk for workplace related infections. Health workers may become infected from patient contact or unprotected exposure to contaminated equipment and supplies. In Tanzania, laboratory technicians, physicians, nurses, midwives and others are exposed to significant additional risk due to the high occupancy of HIV/AIDS patients, currently estimated at 60% of all hospital beds, who suffer from multiple illnesses. Patients are also at risk of becoming infected from inadequate hospital infection precautions.

Health workers that are poorly trained and ill-equipped to protect themselves and patients from the risk of infection undermine the quality of care and actually contribute to the spread of infectious disease. Tanzanian health services have been unable to implement standard guidelines for infection prevention and provide adequate protective gear, disinfectant solutions, and biohazard disposal supplies for all health facilities due to resource constraints.

An MOH proposal to integrate management of the laboratory services of the NACP and Malaria programs within the MOH department of Diagnostic Services at the central level is currently being developed with the goal of strengthening monitoring and supervision of MOH laboratory facilities and staff to ensure quality of the laboratory services being provided.

7. **Infrastructure and Equipment**

The fast paced evolution and introduction of new types of HIV test kits, testing technologies, STI drugs, and new anti-retroviral drugs and medical supplies for treatment and care of PLWHAs requires that laboratory and health service facilities are able to provide the necessary infrastructure (electricity, water, building integrity, security, storage conditions, privacy) and equipment (ELISA readers, ELISA washers, centrifuge, incubators, refrigerators etc) to support laboratory testing and service provision. While the consultants did not undertake field visits to service delivery sites during this preliminary assessment, it was reported that severe constraints related to infrastructure and availability of functioning equipment to support HIV testing exists in peripheral district health facilities.

Quality assurance regarding infrastructure and equipment will depend on documentation, dissemination and implementation of Standard Operating Procedures for building maintenance, correct use, maintenance and repair of equipment, quality testing, and quality assurance through ongoing supervision, inspection and maintenance of buildings and equipment. The consultants were informed that MOH policy and guidelines for standardization of procurement, maintenance and replacement of laboratory equipment are currently under development for implementation during this fiscal year July 2001-June 2002.

8. **Environmental Factors Influencing HIV/AIDS and STI Commodity Supply.**

Other factors within the Tanzania context directly affect functioning of the logistics systems for supply of HIV/AIDS commodities. These include political, legal, and programmatic policies and procedures as well as socio-cultural beliefs and practices. Some of the external, environmental factors that will need to be addressed in order to improve the supply of HIV/AIDS commodities include:

- Revision of the Tanzania National Essential Drug List and STI Standard Treatment Guidelines to replace two drugs currently used for syndromic management of STIs with new first-line standardized treatment drugs is still pending
• The “Determine” HIV1/2 finger prick strip test is an easy to use, low cost test (~ U.S.$2.50 per test) currently in use in private hospitals and laboratories. “Determine” HIV1/2 is being piloted in selected peripheral District hospitals and its use by HIV counselors or other health staff will need to be addressed in the face of a national law requiring all tests to be conducted by certified laboratory technologists.

• Manufacturers, suppliers, and donors that bring product into the country should ensure compliance with Pharmacy Board and Private Health Laboratory Board regulations regarding product registration, licensing for importation, submission of documentation on technical specifications and quality testing for all pharmaceutical and laboratory products, and provide timely notification of consignments to customs clearance authorities.

• Within the political context of Health Sector Reform, decentralization and integration of logistics management functions for health commodities (LMIS reporting, storage and distribution), and the implementation of cost recovery strategies will greatly affect the logistics system and the ultimate availability of these products. Specifically, cost recovery under the indent system for integration of essential drugs and STI drug management at SDPs under a cash and carry system currently being piloted in the Morogoro region if it is implemented nationwide.

• A multi-sectoral Tanzania National AIDS Commission is currently being formed. The priorities, strategies, and the delegation of responsibilities across government ministries by this Tanzania National AIDS Commission will determine how the HIV/AIDS pandemic will be managed. This will certainly affect the demand for and the management of HIV/AIDS commodities in the country. It will be important to keep abreast of the policy decisions mandated by this new commission to be able to adjust the commodity requirements and support the logistics system capacity as needed in coordination with government efforts to combat the HIV/AIDS pandemic.

V. Recommendations

In assessing the HIV/AIDS commodities needed in Tanzania and the capacity of the logistics systems to manage these commodities and ensure their availability at Service Delivery Points, the constraints considered include;

- the realistic level of demand for the services by the population,
- the quantity of services that can realistically be provided by existing staff and facilities,
- the quantity of commodities that can be stored and moved through the distribution system

Decisions for procurement of HIV/AIDS and STI commodities should be based on existing program capacity in terms of current demand and volume of services being provided; the accuracy and reliability of the data being used to forecast needs and estimate requirements; national storage and distribution capacity; availability of the equipment and expendable medical supplies needed to support service provision; and the existing human resource capacity to manage these commodities throughout the MOH health system.

A. General Recommendations
In assessing the needs against the constraints for the supply HIV/AIDS commodities to confront the pandemic, the following general recommendations are offered:

1. MOH and donors should assess the current volume of services being provided and the human resource capacity, infrastructure, equipment, and expendable medical supplies required to provide HIV/AIDS prevention and care services when planning for HIV/AIDS commodity procurement.

2. MOH and donors should consider the capacity to store, distribute and monitor usage and stock status of HIV/AIDS commodities throughout the MOH health system.

3. MOH and donors should address feasibility of “full supply” for selected HIV/AIDS commodities in mobilizing international and local resources for commodity procurement.

4. MOH and donors should consider financial, technical and management support for strengthening MOH logistics system capacity to provide an adequate supply of HIV/AIDS commodities at Service Delivery Points.

5. Support development of a Logistics Management Information System (LMIS), or strengthening of existing LMIS, for routine collection and reporting of logistics data by health facilities to monitor usage and stock balances, calculate correct quantities to order, prepare more accurate forecasts of needs, and improve inventory management which will in turn better inform decision-making for budgeting and procurement at the central level and ultimately improve availability of products at health facilities.

6. Follow up on earlier recommendations to integrate storage and distribution of STI drugs with essential drug distribution through MSD.45

7. MOH and donors should coordinate with MSD on product selection, procurement, storage and distribution of different HIV/AIDS commodities to avoid duplication of efforts and maximize efficiencies.

8. Work with the Pharmacy Supply Unit (PSU) and other relevant MOH Departments to strengthen forecasting and requirements estimation for HIV/AIDS commodities.

9. Study the impact of the Indent and Capitalization systems on integration of HIV/AIDS commodities and services into existing health services structure and the implications for logistics management and ultimate availability of these products.

10. Syndromic Management of STDs

- Strengthening of STD program management, human resource capacity, and monitoring and surveillance activities at the central level46 should include strengthening of the logistics system and the LMIS to ensure continuous availability of drugs, laboratory reagents and expendable medical supplies for treatment at District level and health facilities in the 12 regions.

- Revive and standardize use of the “Recording/Reordering Form for STD Drugs” with some minor adjustments for all MOH health facilities nationwide. These forms should also be used

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by any other organizations that may be operating in specific regions to support STD services.

- Under Health Sector Reform, Districts are now responsible for estimation of their own drug needs which is currently based on inadequate reporting of the number of syndromes treated and number of pregnant women screened for Syphilis at first ante-natal visit. Improve forecasting with logistics data and estimation of drug requirements to include supplier lead times and buffer stocks.

- Assess and select best strategies for integrating STD drug distribution with MSD essential drug distribution to Districts

11. Human Resource Capacity

- Design and implementation of the logistics systems for monitoring, distribution and storage of HIV/AIDS commodities should be incorporated into ongoing human resource development activities under Health Sector Reform.

- Appropriate transfer of knowledge and skills to health personnel through competency-based training will be needed to implement and strengthen logistics functions at the District levels and to provide effective monitoring and supervision of the supply chain for HIV/AIDS commodities.

- Health workers need to be adequately equipped to protect themselves and patients against HIV infection which implies procurement and training in use of protective gear, disinfectants and biohazard discard procedures and supplies. Standardize national guidelines and training of health personnel in Universal Bio-Safety Precautions and support procurement of needed health worker protective gear, disinfectant solutions and bio-hazard disposal supplies.

12. Assess the capacity of testing facilities to provide increased volume of HIV testing services:

- Document the types of HIV test kits in use and under consideration for use in MOH health facilities

- Create an inventory list of laboratory equipment and expendable medical supplies required to support HIV testing including supplies needed for Universal Bio-Safety precautions that should be available at each health facility

- Conduct survey of facilities to assess infrastructure, operation and maintenance of equipment

- Assess knowledge and skills of laboratory and other health service personnel regarding the storage, use, and quality monitoring of equipment, reagents and supplies

- Assess current procedures and practices for disposal of bio-hazardous waste products

13. Legal and Regulatory Environment

- Manufacturers, suppliers, and donors that bring product into the country should ensure compliance with Pharmacy Board and Private Health Laboratory Board regulations regarding product registration, licensing for importation, submission of documentation of technical specifications and quality testing for all pharmaceutical and laboratory products, and should provide timely notification of consignment to customs clearance authorities.

- Donations of drugs and supplies should comply with guidelines stipulated in “Guidelines on Donations of Drugs and Medical Equipment to the Health Sector for Tanzania Mainland”. Ministry of Health, 1995.
B. Next Steps

The following critical issues have been identified and will need to be resolved to be able to finalize the requirements estimations to be included in the MOH proposal for Japanese grant aid for assistance in procurement of HIV/AIDS commodities.

HIV Test Kit Selection and Procurement

- A decision regarding approval of the “Determine” HIV1/2 rapid assay finger prick strip test or other similar test to be used in public sector facilities must be made in order for this type of test kit to be considered for possible procurement by the Government of Japan.

- Depending on the type of HIV test under consideration, validation of the proposed rapid assay tests for Tanzania may be required to test for accuracy in-country against known local specimen samples. It was determined that lack of funding and the time required to carry out the validation would be constraints to completion of HIV rapid assay test validation in time for submission of the MOH proposal to the Government of Japan.

- The levels of the MOH health system and the types of health facilities where HIV testing using “Determine” will be provided, and which health providers will be qualified to conduct this type of testing must be determined by the MOH. This decision will need to be made in the face of a national law restricting laboratory testing to certified laboratory technologists and will need to address quality assurance issues regarding interpretation of testing results by non-laboratory technologists.

- The MOH should commit financial and human resources and plan for training and supervision of health workers in providing HIV testing using “Determine” HIV 1/2 (or other rapid assay test selected) to have been completed by the time product arrives in country and is ready for distribution.

- Continuing information gaps need to be resolved to estimate the number of ELISA tests needed at regional and consultant hospitals vs. the number of Capillus HIV 1/2 and other rapid assay tests needed at District hospitals out of the total number of HIV test kits required for Blood Safety for one year for the MOH.

- At this time, with the understanding that public sector VCT services managed by NACP will have no financial, technical or management support, the Requirements Estimation prepared for HIV Test Kits for this purpose will not be included in the MOH proposal to the Government of Japan. Small quantities of HIV test kits to support the AMREF project to enhance VCT in selected NGO and public sector facilities will be included.

- A critical issue for procurement of HIV/AIDS commodities by the Japanese Government is the current restriction of one shipment a year. The short shelf life of HIV test kits and RPR syphilis antigen tests (12 months and 11 months respectively) will not allow timely distribution and use of a one year supply of product before expiration. Flexibility in the frequency and timing of staggered shipments of these test kits is essential to ensure against loss of product due to expiration and will enhance capacity to respond to changes in demand. Close monitoring of use of HIV test kits and RPR syphilis antigen tests and updating of stock balances will be critical to avoid loss of product through expiration.
CDC as an alternate source of procurement of HIV test kits for Tanzania which could complement the Government of Japan assistance and provide smaller shipments at different times of year was discussed with the CDC Tanzania AIDS Project Director as a possible solution to the Japanese restriction of one shipment a year.

- All of the above mentioned critical decisions will affect the quantities of “Determine” HIV 1/2 test kits and other HIV test kits to be procured.

**STD Drug Replacement and Revision of Standard Treatment Guidelines and Syndromic Algorithm**

- Two first-line treatment drugs for gonorrhea with below acceptable cure rates in Tanzania (Kanamycin and Co-trimoxazole) must be replaced and incorporated into the Standard Treatment Guidelines and Algorithm for Syndromic Management of STDs so that these new drugs may be procured by the Japanese. The quantities required of the new drugs may be estimated once the treatment protocols have been modified.

- An expansion of STD services and Syphilis Screening in pregnant women from 12 to the remaining eight regions of the country is planned for FY 2001-2002. The requirements estimation for STD drugs and RPR Syphilis Antigen tests has been based on estimates of number of syndromes to be treated and numbers of pregnant women attending ANC clinics in 20 regions. Data inputs were not available for estimating current demand/use of STD drugs and RPR syphilis antigen tests in the 12 regions, therefore estimates for expansion to eight regions are empirically based on hunches of program managers for these commodities. The STD Program monitoring and supervision systems will need significant strengthening to be able to track distribution, usage and stock levels of the STD drugs, laboratory reagents and consumable medical supplies needed to support current program activities and the planned service expansion.

- STD program staff estimate that given the current distribution of STD drugs, plans for service expansion, and resources currently available for local procurement, drug supply needs could be covered through the first quarter of 2002. Since shipment of Japanese procured drugs would not arrive until May 2002, a potential drug shortage could occur in early 2002.

**MSD Storage and Distribution Capacity**

Input from MSD is critical at this stage to ascertain storage and distribution capacity for a large shipment of HIV/AIDS commodities for one year which would be scheduled to arrive in May 2002.

- Once the requirements estimations for all the selected HIV/AIDS commodities have been finalized, MSD should also prepare a Cost Estimate for storage and distribution to Districts for a year and funding of these costs will need to be secured. For HIV and RPR test kits this would include cost of cold storage and cold chain distribution.

- At the time of the Japanese decision to procure, MSD distribution, stock on hand and pending shipments on order will need to be updated in order to adjust the requirements estimation and to ensure that adequate storage capacity exists when the Japanese shipment is expected to arrive.
The Lead Times and Buffer Stock for each HIV/AIDS commodity will need to be adjusted in the requirements estimation once suppliers have been identified, and the quantities to order of each commodity will need to be re-calculated to ensure procurement of adequate quantities to cover Lead Time and Buffer Stock.

Potential Public Sector Condom Shortfall

The current unresolved funding source for public sector condom procurement (see pg. 33 of this report) leaves the following gaps for condom supply in Tanzania. A decision will need to be made whether to include these condom requirements in the MOH proposal for possible assistance from the government of Japan:

Year 2001
Condom Requirements = 50 million condoms

10 million condoms received April 2001 (funded)
(4 month delay in shipment which had been planned for January 2001)

20 million condoms to be shipped June 2001 (pending)
(shipments had been planned for 10 million to be received in February and 10 million in May)

20 million condoms (unresourced)
(shipments planned for 10 million to be received in August and 10 million in October)

Year 2002
Condom Requirements = 30 million condoms (unresourced)

Year 2003
Condom Requirements = 30 million condoms (unresourced)

Total Condom Requirements currently unresourced for 2001 – 2003 = 80 million condoms

Total Cost Estimate = Approximately U.S. $2,969,250

(See Appendix E: Table 11: Public Sector Condom Requirements for Family Planning and HIV/STI Prevention. TANZANIA 2001 – 2003)
Appendix A:
HIV/AIDS Logistics Review
To Support the Joint USAID/JICA Planning Team

Background:
In Tanzania, there is a growing recognition of the devastating effect of HIV/AIDS and an increasing commitment from the Government of Tanzania and donor agencies to address HIV/AIDS prevention and treatment. With the commitment of international donor organizations following the Durban conference, there will be increasing commitment of funds and medical supplies to fight this pandemic in the next one year.

USAID and JICA (Japanese International Cooperation Agency) have been working together for some years in a global strategic alliance to develop and implement collaborative and complementary development programs. This global strategic alliance has proposed a joint planning team to visit Tanzania from January 22 – February 4, 2001 to explore possible joint collaborative work, particularly addressing the prevention and treatment of HIV/AIDS.

This visit would be under the auspices of the Permanent Secretary of the Ministry of Health and would cut across all sections of the Ministry to address HIV/AIDS problems. Support provided by the DELIVER project in addressing logistics and forecasting issues for HIV/AIDS supplies, their control and their distribution would be under the overall control and approval of the Ministry of Health.

The DELIVER Project has been asked by USAID/Tanzania to provide technical support in logistics areas to this joint team. This would involve pre-visit information collection and product quantification and would include participation and support during the joint team visit the end of January. We propose sending a logistics specialist, Claudia Allers, to work with our local agent, Peter Riwa, to collect existing information and examine existing distribution systems so that as much information as possible will be available for the joint team on arrival.

We also have another asset available in country, which is Crown Agents Tanzania, who is a DELIVER partner. Crown Agents has worked closely with JICA over the past few years and are in fact representing JICA in evaluation of JICA projects throughout Africa. In addition, they have been purchasing agents for JICA supported product supply in Africa.

So, we propose a two-week trip in December by Claudia Allers, who would work with Peter Riwa in country, with senior level support from Paul Phillips, the Crown Agents Representative in Tanzania as needed. Peter would be available to help collect additional information or answer addition questions as needed before the joint team arrives in late January. Claudia would then return for the two-week visit of the Joint team, and could be supported by both Peter Riwa and Paul Phillips as necessary.

The magnitude of the range of information and projections needed for this joint team visit to be successful, and the potential impact for the Ministry of Health in addressing the HIV/AIDS epidemic, justify the resources needed to make this visit as productive as possible.

II. General Purpose of the Logistics Technical Assistance

A. Provide Best-possible information on Quantification for the following products:
   1. STI drug treatment kits
   2. HIV/AIDS reagents test kits
3. Syphilis screening tests
4. Tetanus toxic vaccines
5. Condoms for all purposes
6. Gloves and disinfectants
7. Tuberculosis treatment drugs
8. Other supplies as requested

B. Identify and record policies that effect product quantification
C. Identify existing and possible logistics distribution systems for the above products

III. Specific Activities

A. Collect existing projections and quantification information, and record calculation methodology.
B. Calculate demographic quantification based on morbidity data
C. Identify policy on STI drug use for other purposes
D. Work with the Medical Stores Department (MSD) for shipment protection and for seasonal and/or geographic projections
E. When authorized, work with the following groups to collect information on existing supplies, promised commodities and projected needs.
   1. National AIDS Control Program
   2. EPI team, MOH
   3. Pharmacy Department
   4. Reproductive and Child Health Section, MOH
   5. Population Services International
   6. UMATI
   7. Others as necessary

F. Collect Information on possible/planned donated supplies
   1. USAID
   2. DFID
   3. DANIDA
   4. MOH/Tanzania
   5. KfW
   6. UNFPA
   7. PSI/Dutch
   8. MSD
   9. Crown Agents
   10. Others as identified

G. Work with AMREF to identify HIV/AIDS test kit needs through them and examine logistics needs for this distribution
H. Collect information or design a survey identify HIV/AIDS laboratory testing equipment, its existing use, its operational status and trained personnel in place
I. Prepare a report after the initial visit and identify information gaps for follow up
J. Liase with USAID/Tanzania to coordinate with the joint team visit and to identify other needed information.
K. Liase with Paul Philips of Crown Agents for processing customs clearance and other procedural technical assistance particular to Tanzania
L. Be prepared to participate in joint team visit January 22 to February 4, 2001 to provide a logistics technical perspective
Appendix B:
“U.S. - Japan Common Agenda: Summary of JSI/DELIVER Support to the Joint Project Formulation Mission to Tanzania January 22 - February 2, 2001”.
Submitted to U.S. AID Washington, G/PHN/OFPS, Common Agenda and distributed to Tokyo, Japan.
U.S. – Japan Common Agenda

Summary of JSI/DELIVER Support to the Joint Project Formulation Mission to Tanzania, January 22 – February 2, 2001

USAID/Tanzania asked the John Snow, Inc/DELIVER Project, a U.S. AID Cooperating Agency specialized in logistics management of essential health commodities, to conduct an initial assessment of possible areas of technical collaboration under the U.S. – Japan Common Agenda and identify target issues to be presented to the U.S. – Japan Joint Project Formulation Mission. To this end, JSI/DELIVER consultants traveled to Dar es Salaam in December 2000 to participate in a series of meetings and technical discussions with USAID/Tanzania, MOH officials, the local JICA Advisor, other donor agencies, and NGO and church organizations involved in health sector activities in Tanzania.

It is clear from discussions with the Ministry of Health, that recognition of the magnitude and the devastating effect of the HIV/AIDS pandemic in the country has made this a top priority for the Government of Tanzania and an area of growing commitment. Indeed, words used to describe the situation by MOH officials were “war” and “national emergency”.

Recent Government of Tanzania efforts to combat the serious health and socio-economic impact of the HIV/AIDS pandemic include:
- the establishment of a multi-sectoral, Tanzania National AIDS Commission
- a statement by the President in his speech during World AIDS Day calling upon the public to come forward for Voluntary HIV Counseling and Testing

Within this context, technical and financial cooperation to support HIV/AIDS prevention and care was identified as a possible area of collaboration under the US – Japan Common Agenda and would support the eleven priority areas outlined in the government's Strategic Framework for the Third Medium Term Plan (MTP III) for Prevention and Control of HIV/AIDS/STD for 1998 – 2002.

While not listed in order of priority, the following interventions have been identified as areas for possible technical assistance and financial support with a focus on strengthening program management; training of health personnel; and provision of drugs and medical supplies within each of these areas. One of the goals of the U.S.-Japan Project Formulation Mission will be to determine existing gaps and target the best areas for impact on the HIV/AIDS pandemic.

1. Management of Sexually Transmitted Infections
   - Support and strengthening of the STI Program to expand from 12 to all 20 regions of the country
   - Training of health providers in the Syndromic Management Approach down to the health center level;
   - Strengthen the Logistics MIS to support procurement and improve distribution of drugs and medical supplies needed for clinical and syndromic management of STIs

2. Reduce transmission of HIV/STI infection.
   - Support Information, Communication and Education (IEC) efforts to reduce unsafe sexual behavior and promote condom use
   - Ensure procurement and distribution of condoms to increase availability in all sectors
3. Expand Voluntary Counseling and Testing (VCT) services
   - Training of additional HIV Counselors and laboratory technicians to conduct counseling and testing
   - Provision of adequate supply of HIV Test Kits and medical supplies to support expanded services

4. Ensure Safety of Blood Supply
   - Support monitoring of standards and quality of blood transfusion services
   - Ensure procurement and distribution of sufficient HIV Test Kits for testing blood supply

5. Strengthen Syphilis screening and treatment during pregnancy in Ante-natal Care services
   - Increase access to services and
   - Ensure adequate supply of Syphilis Antigen Reagents, drugs and supplies for testing and treatment

6. Promote Health Worker and Patient Safety
   - Train health workers in practice of Universal Infection Precautions
   - Ensure adequate procurement and distribution of latex gloves and disinfectant solutions

7. Expand Home Based Care for People Living with HIV/AIDS (PLHAs)
   - Support training of community based counselors for Home Based Care
   - Ensure adequate quantities of drugs and medical supplies needed to provide Home Based Care Kits

MOH counterparts and JSI/DELIVER consultants are currently undertaking quantification of the requirements and cost estimates of the HIV/AIDS/STD commodities that would be needed to support the above mentioned interventions for the period July 2001 – June 2002.

1. Condoms for prevention of HIV/STI transmission
2. HIV Test Kits for Blood Safety, Voluntary Counseling and Testing (VCT) and to support monitoring of the HIV/AIDS pandemic
3. Drugs, Reagents and Expendable Medical Supplies for syndromic management of Sexually Transmitted Infections
4. Syphilis screening tests, and drugs and expendable medical supplies for Syphilis treatment
5. Gloves and disinfectants to ensure Health Worker and Patient Safety in accordance with Universal Infection Precautions
6. Home Based Care Kits for AIDS patients
7. Inventory list of laboratory equipment required to support Blood Safety, HIV testing and Syphilis Testing

On return to Tanzania on January 15, 2001, the JSI/DELIVER consultants will collaborate with USAID/Tanzania, the MOH and the local JICA representatives to support the MOH in drafting a Concept Paper for submission to the joint U.S. – Japan Project Formulation Mission, and will continue the work to complete the quantification and cost estimate exercise with MOH counterparts.
Appendix C:
Submitted to Dr. Gabriel Upunda, Chief Medical Officer, Ministry of Health.
Background:

Since 1993, the U.S. and Japan Governments have been working together within a global strategic alliance to develop and implement collaborative and complementary development programs known as the U.S. – Japan Common Agenda, with USAID and JICA as the local implementing agencies. The U.S. – Japan Common Agenda has proposed a joint Project Formulation Mission team to visit Tanzania from January 22 – February 2, 2001 to identify areas of possible joint collaborative work. Preliminary discussions in-country have identified HIV/AIDS prevention and care as an important area for possible technical and financial assistance, including a component to improve availability of the key commodities and supplies needed to support HIV/AIDS prevention and care activities.

Purpose of JSI/DELIVER Technical Assistance:

Therefore, in preparation for the upcoming U.S. – Japan Joint Project Formulation Mission to Tanzania, USAID/Tanzania asked the John Snow, Inc/DELIVER Project, a USAID Cooperating Agency specialized in logistics management of essential health commodities, to conduct an initial assessment of 1) the key commodities and supplies needed to support HIV/AIDS prevention and care activities in Tanzania, and 2) the capacity of the existing logistics systems to monitor and distribute these commodities.

Specifically, JSI/DELIVER was asked to provide technical assistance in quantification and logistics management of HIV/AIDS commodities and supplies. To this end, JSI/DELIVER consultants traveled to Dar es Salaam in December 2000 to participate in a series of meetings and technical discussions with USAID/Tanzania, MOH officials, the local JICA Advisor, other donor agencies, and NGO and church organizations involved in HIV/AIDS prevention and care activities in Tanzania.

Preliminary Findings:

It is clear from discussions with the Ministry of Health, that recognition of the magnitude and the devastating effect of the HIV/AIDS pandemic in the country has made this a top priority for the Government of Tanzania and an area of growing commitment. Indeed, words used to describe the situation by MOH officials were “war” and “national emergency”.

Recent Government of Tanzania efforts to combat the serious health and socio-economic impact of the HIV/AIDS pandemic include:
- the establishment of a multi-sectoral, Tanzania National AIDS Commission
- a statement by the President in his speech during World AIDS Day calling upon the public to come forward for Voluntary HIV Counseling and Testing
Within this context, technical and financial cooperation to support HIV/AIDS prevention and care would support the eleven priority areas outlined in the government’s Strategic Framework for the Third Medium Term Plan (MTP III) for Prevention and Control of HIV/AIDS/STD for 1998 – 2002.

While not listed in order of priority, the following interventions have been identified as areas for possible technical assistance and financial support with a focus on strengthening program management; training of health personnel; and provision of drugs and medical supplies within each of these areas.

1. Management of Sexually Transmitted Diseases
2. Reduce transmission of HIV/STI infection
3. Increase condom availability and accessibility; and ensure product quality
4. Expand Voluntary Counseling and Testing (VCT) services
5. Ensure Safety of Blood Supply
6. Strengthen Syphilis screening and treatment during pregnancy in Ante-natal Clinic services
7. Promote Health Worker and Patient Safety
8. Strengthen HIV/AIDS Care and Support Services

**Issues related to the supply and management of HIV/AIDS commodities in Tanzania:**

Many issues have been identified which will affect the Logistics MIS, quantification and forecasting, procurement, storage, distribution and use of HIV/AIDS commodities in Tanzania. These include program management issues, pending donor funding commitments, current human resource capacity, the political, legal and regulatory environment for drug management, and multiple logistics system implications that the procurement and distribution of these commodities will entail.

Some of the immediate problems regarding supply and availability of HIV/AIDS commodities to support the above mentioned interventions are:

- A funding source for the supply of 20 million condoms is still needed to meet 2001 requirements
- Currently there is no funding source for STD drugs and medical supplies through the NACP STI Program. Leftover monies from the former donor have been given to MSD for final procurement of STI drugs through June 2001.
- Revision of the Tanzania National Essential Drug List and STD Treatment Protocol to replace two drugs currently used for syndromic management with new first-line standardized treatment drugs is still pending.
- Current supply of STD drugs suffers shortages and stock-outs and is inadequate to treat existing SDI cases. Estimates of true demand and program capacity should be taken into account in quantification methodology.
- The expressed desire to officially mandate and expand Voluntary HIV Counseling and Testing services within MOH is constrained by the current shortage of HIV test kits, expendable supplies and laboratory equipment, and a lack of certified laboratory technologists and HIV counselors, especially at the health center and dispensary levels.
• An easy to use, low cost (~ U.S.$2.50 per test strip) finger prick strip test for HIV is currently available and in use in private hospitals and laboratories. While procurement and use of this test in public sector facilities has not been approved, its use by HIV counselors will need to be addressed in the face of a national law requiring all tests to be conducted by certified laboratory technologists.

• Within the political context of Health Sector Reform, decentralization and integration of logistics management functions for health commodities (LMIS reporting, storage, distribution), and the implementation of cost recovery strategies will greatly affect the logistics system and the ultimate availability of these products. Specifically, cost recovery under the indent system for integration of essential drugs and STD drug management at SDPs under a cash and carry system currently being piloted in the Morogoro region if it is implemented nationwide.

• The President of the United Republic of Tanzania announced the establishment of a multi-sectoral Tanzania National AIDS Commission prior to this technical assistance visit. The priorities, strategies, and the delegation of responsibilities across government ministries by this Tanzania National AIDS Commission will determine how the HIV/AIDS epidemic will be managed. This will certainly affect the demand for and the management of HIV/AIDS commodities in the country. It will be important to keep abreast of the policy decisions mandated by this new commission to be able to adjust the commodity requirements and support the logistics system capacity as needed in coordination with government efforts to combat the HIV/AIDS epidemic.

**Next Steps:**

MOH counterparts and JSI/DELIVER consultants are currently undertaking quantification and cost estimates of the HIV/AIDS/STI commodities that would be needed to support the above mentioned interventions for the period July 2001 – June 2002.

1. Condoms for prevention of HIV/STD transmission
2. Drugs and Expendable Medical Supplies for syndromic management of Sexually Transmitted Diseases
3. HIV Test Kits for Blood Safety, Voluntary Counseling and Testing (VCT) and to support monitoring of the HIV/AIDS pandemic
4. Syphilis Screening Tests, and Drugs and Expendable Medical Supplies for Syphilis treatment
5. Gloves and disinfectants to ensure Health Worker and Patient Safety in accordance with Universal Infection Precautions
6. Home Based Care Kits for AIDS patients
7. Inventory list of laboratory equipment required to support Blood Safety, HIV testing and Syphilis Testing

**January 15 – 19, 2001**

On return to Tanzania on January 15, 2001, the JSI/DELIVER consultants will:

- collaborate with USAID/Tanzania, the MOH and the local JICA representatives to support the MOH in preparing for the joint U.S. – Japan Project Formulation Mission
- continue the HIV/AIDS Commodity Quantification and Cost Estimate exercise with MOH counterparts
January 22 – February 2, 2001

JSI/DELIVER consultants will:

- participate in joint US – Japan team visit and provide logistics technical assistance as needed to the Japanese Project Formulation Mission members
- continue work as needed to complete HIV/AIDS Commodity Quantification and Cost Estimates

**Products:**

JSI/DELIVER technical report on “Preliminary Assessment of HIV/AIDS Commodity Needs and Logistics System Capacity” will include:

- Verification of data sources and the quality of the information available for estimating requirements
- Documentation of current quantification methodologies
- Quantification and Cost Estimates for selected HIV/AIDS commodities and supplies
- Preliminary assessment of the logistics system capacity for HIV/AIDS commodities and discussion of issues affecting the LMIS, procurement, quantification and forecasting, storage, distribution and use of these commodities.
PRINCIPAL CONTACTS:

**USAID/Tanzania**
- Nancy Godfrey, Health Sector Advisor
- Michael Mushi, JSI/DELIVER Activity Manager
- Janis Timberlake, Private Sector NGO Advisor

**HealthScope, Tanzania Ltd**
- Peter Riwa, HST Associate Director
  (JSI/DELIVER consultant)

**Medical Stores Dept (MSD)**
- Ben Mkasa, Director of Distribution and Sales

**Pharmaceutical Board**
- Dr. Margareth Ndomondo-Sigonda, Registrar

**MOH:**
- Ms. M. J. Mwaffisi, Permanent Secretary
- Dr. G. Upunda, Chief Medical Officer

**Directorate of Preventive Services**
- Dr. A. Mzige, Director of Preventive Services
  **National AIDS Control Program (NACP)**
  - Dr. R. Swai, Program Manager
  - Dr. L. Kikuli, Program Administrator
  - Dr. M. Nyang'anya, STD Program Coordinator
  - Mr. Khalid Hassan, Laboratory Coordinator
  - Ms. Z. Msumi, Social Services and Counseling Coordinator

**Reproductive and Child Health Services (RCHS)**
- Daniel Mmari, Logistics Officer
- Cyprian Mpemba, MIS Officer

**EPI Program**
- Dr. Eseko, Head of Epidemiology/Disease Control
- Dr. C. Akim, Program Manager

**Directorate of Curative Services**
- Dr. Z. Berege, Director
  **National TB/Leprosy Program**
  - Dr. B.F. Njako, Senior Medical Officer

**Pharmaceutical Services**
- Dr. J. Muhume, Chief Pharmacist and
  Chairman of the Pharmaceutical & Supplies Unit (PSU)

**Diagnostic Services**
- Dr. Y. Ipuge, Director

**Directorate of Health and Human Resource Development**
- Dr. Pemba, Acting Director

**Crown Agents**
- Paul Phillips, Representative Tanzania

**American Research Foundation**
- Dr. Daraus Bukenya, Country Director
  **AMREF**
  - Dr. Gina Ka-Gina, STD Coordinator
  - Mr. David Ocheng, Project Manager, Laboratory

**PSI Tanzania**
- Mr. Deo Ng’wanansabi, Sales Manager

**JICA/MOH**
- Ms. Kazuko Hashimoto, Health Cooperation Planning Advisor

**Christian Social Services Commission (CSSC)**
- Dr. Wim. Flipse, Policy Advocacy Research Advisor

**UNFPA**
- Dorothy Ussiri, National Program Officer
Appendix D:
Commodity Flow Charts 1.- 3., TANZANIA
[February 2001]
COMMODITY FLOW CHART 1 - Tanzania

[Donor Inputs]

- Dutch DGIS/RNE
- UNFPA, USAID, Donor Basket Funding:
  - MOH, JICA, EU
  - UNAIDS? CDC?
  - EU, UNAIDS/ Belgian Govt
  - WHO/ Italian Govt
- Mini-Basket Funding: RNE, IAID, WHO
  - Swiss SDC, MOH, GLRA
- Donor Basket Funding: MOH, DFID, DANIDA, NORAD, SDC, DGI/RNE, Irish AID
  - World Bank, Local Govt Contributions
  - UNICEF, WHO?
  - UNAIDS/ Belgian Govt, Others?

PSI

- Condoms
- FP, Condoms for HIV/STD Prevention
- HIV Test Kits & Supplies
- STD Drugs, Dx Supplies
- TB/ Leprosy
- Essential Drug Kits Capitalization Fund
- Vitamin A Vaccines Anti-retrovirals
- Home Based Care Kits, Others?

PORT OF ENTRY

Dar es Salaam

PSI

- Medical Stores Dept MSD

Private Vendors

NGOs, Church Org

MOH Facilities

NACP

Private Hospitals

CUSTOMERS
Appendix E: Estimated Requirements and Cost Estimate Tables for Selected HIV/AIDS Commodities
**TABLE 1: Estimate of Population for the Year 2000 and 2001, Tanzania**

<table>
<thead>
<tr>
<th>Regions</th>
<th>Estimate 2000</th>
<th>Estimate 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Arusha</strong></td>
<td>2,177,718</td>
<td>2,269,187</td>
</tr>
<tr>
<td><strong>2. Dar es Salaam</strong></td>
<td>2,339,888</td>
<td>2,450,954</td>
</tr>
<tr>
<td><strong>3. Dodoma</strong></td>
<td>1,648,681</td>
<td>1,688,872</td>
</tr>
<tr>
<td><strong>4. Iringa</strong></td>
<td>1,663,242</td>
<td>1,718,052</td>
</tr>
<tr>
<td><strong>5. Kigoma</strong></td>
<td>1,182,800</td>
<td>1,215,943</td>
</tr>
<tr>
<td><strong>6. Lindi</strong></td>
<td>784,324</td>
<td>798,389</td>
</tr>
<tr>
<td><strong>7. Mara</strong></td>
<td>1,505,834</td>
<td>1,570,301</td>
</tr>
<tr>
<td><strong>8. Mbeya</strong></td>
<td>1,999,271</td>
<td>2,051,046</td>
</tr>
<tr>
<td><strong>9. Morogoro</strong></td>
<td>1,694,095</td>
<td>1,740,186</td>
</tr>
<tr>
<td><strong>10. Mwanza</strong></td>
<td>2,694,684</td>
<td>2,804,768</td>
</tr>
<tr>
<td><strong>11. Shinyanga</strong></td>
<td>2,673,863</td>
<td>2,774,923</td>
</tr>
<tr>
<td><strong>12. Tanga</strong></td>
<td>1,652,664</td>
<td>1,688,658</td>
</tr>
</tbody>
</table>

**Sub Total**

22,017,064 22,771,279

**41.8 % Aged 15 - 49**
9,203,133 9,518,395

**47.5% Male**
4,371,488 4,521,237

**52.5% Female**
4,831,645 4,997,157

<table>
<thead>
<tr>
<th>Regions</th>
<th>Estimate 2000</th>
<th>Estimate 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>13. Coast</strong></td>
<td>823,953</td>
<td>842,253</td>
</tr>
<tr>
<td><strong>14. Kagera</strong></td>
<td>1,928,473</td>
<td>1,974,844</td>
</tr>
<tr>
<td><strong>15. Kilimanjaro</strong></td>
<td>2,054,989</td>
<td>2,182,839</td>
</tr>
<tr>
<td><strong>16. Mtwara</strong></td>
<td>1,082,644</td>
<td>1,102,066</td>
</tr>
<tr>
<td><strong>17. Rukwa</strong></td>
<td>1,281,190</td>
<td>1,375,672</td>
</tr>
<tr>
<td><strong>18. Ruvuma</strong></td>
<td>1,171,383</td>
<td>1,212,485</td>
</tr>
<tr>
<td><strong>19. Singida</strong></td>
<td>1,103,462</td>
<td>1,134,579</td>
</tr>
<tr>
<td><strong>20. Tabora</strong></td>
<td>1,357,729</td>
<td>1,388,669</td>
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</tbody>
</table>

**Total**

32,820,887 33,984,686

**41.8 % Aged 15 - 4 9**
13,719,131 14,205,599

**47.5% Male**
6,516,587 6,747,659

**52.5% Female**
7,202,544 7,457,939

* Health Statistics Abstract, 1999 United Republic of Tanzania, Ministry of Health
** Tanzania: Reproductive and Child Health Survey 1999
<table>
<thead>
<tr>
<th>Drug Product</th>
<th>01-Jul-99 Beginning Stock Balance</th>
<th>Quantity Distributed</th>
<th>30-Jun-00 Ending Stock Balance</th>
<th>01-Jul-00 Beginning Stock Balance</th>
<th>Quantity Received</th>
<th>Quantity Distributed</th>
<th>31-Mar-01 Current Stock Balance</th>
<th>31-Mar-01 Quantity On Order</th>
<th>Quantity To Be Distributed</th>
<th>Estimate Ending Stock Balance</th>
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<tbody>
<tr>
<td>Benzathine Penicillin dry powder for Injection</td>
<td>127,250</td>
<td>105,450</td>
<td>21,800</td>
<td>21,800</td>
<td>15,458</td>
<td>208,736</td>
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<tr>
<td>Ceftriaxone powder for Inj. (250 mg i.m. , Stat)</td>
<td>11,243</td>
<td>2,215</td>
<td>9,028</td>
<td>9,028</td>
<td>1,024</td>
<td>15,284</td>
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<tr>
<td>Clotrimazole Cream 1% 20 g</td>
<td>24,571</td>
<td>20,571</td>
<td>4,000</td>
<td>4,000</td>
<td>8,062</td>
<td>47,242</td>
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<tr>
<td>Clotrimazole 100 mg Pessary</td>
<td>10,944</td>
<td>10,944</td>
<td>0</td>
<td>0</td>
<td>2,924</td>
<td>6,762</td>
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<tr>
<td>Co-trimoxazole 400mg/80mg tablet</td>
<td>8,704</td>
<td>4,172</td>
<td>4,532</td>
<td>4,532</td>
<td>2,283</td>
<td>1,355</td>
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<tr>
<td>Doxycycline 100 mg capsule</td>
<td>7,009</td>
<td>2,724</td>
<td>4,285</td>
<td>4,285</td>
<td>435</td>
<td>5,914</td>
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<tr>
<td>Erythromycin 250 mg tablet p.o.</td>
<td>153</td>
<td>153</td>
<td>0</td>
<td>0</td>
<td>1,323</td>
<td>7,424</td>
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<tr>
<td>Erythromycin dry powder for syrup, (125 mg/5ml 100ml bottle)</td>
<td>14,553</td>
<td>5,181</td>
<td>9,372</td>
<td>9,372</td>
<td>9,567</td>
<td>23,686</td>
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<tr>
<td>Erythromycin eye ointment 0.5%, 5 g (q6h)</td>
<td>6,050</td>
<td>6,050</td>
<td>0</td>
<td>0</td>
<td>3,124</td>
<td>15,800</td>
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<tr>
<td>Kanamycin (acid sulphate) powder for Injection</td>
<td>87,000</td>
<td>53,870</td>
<td>33,130</td>
<td>33,130</td>
<td>3,124</td>
<td>15,800</td>
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<tr>
<td>Kanamycin Injection (sulphate) (25mg/kg stat)</td>
<td>6,500</td>
<td>6,500</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Metronidazole 250 mg tablet</td>
<td>1,926</td>
<td>958</td>
<td>968</td>
<td>968</td>
<td>1,792</td>
<td>9,544</td>
<td></td>
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<tr>
<td>Oxytetracycline eye ointment 1.0%, 5g tube (20d/tube)</td>
<td>209,167</td>
<td>39,732</td>
<td>169,435</td>
<td>169,435</td>
<td>22,624</td>
<td>7,857</td>
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</tr>
<tr>
<td>Podophylline 10% in water/60 ml (10 doses/bottle)</td>
<td>1,159</td>
<td>977</td>
<td>182</td>
<td>182</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Silver Nitrate 75%, Single Use Tips (100/box)</td>
<td>1,650</td>
<td>1,650</td>
<td>0</td>
<td>0</td>
<td>Not Stocked</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Water for Injection 5 ml</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Water for Injection 10 ml</td>
<td>219,380</td>
<td>151,099</td>
<td>68,281</td>
<td>68,281</td>
<td>121,575</td>
<td>742,324</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Description of Item**

- **Vironostika Uniform II HIV 1/2 plus 0** [Organon ELISA]
  - 59 Kits MSD 11,328
  - 391 Kits NACP 75,072

- **Enzygnost HIV 1 / HIV 2 plus** [Behring ELISA]

- **"Capillus" HIV 1/HIV 2 Test Kit**
  - Fast User = 100/Kit
    - 250 Kits MSD 25,000
    - 2,289 Kits NACP 228,900

- **"Capillus" HIV 1/HIV 2 Test Kit**
  - Slow User = 20/Kit

- **"Determine" HIV 1/2 Test Kit**
  - Fast User = 100/Kit

- **"Determine" HIV 1/2 Test Kit**
  - Slow User = 20/Kit

- **Rapid Plasma Reagin (RPR) Syphilis Antigen Test (100/kit)**
  - 0 Kits MSD 0
  - 2,357 Kits NACP 235,700

---

1 Distributed to NACP and directly to clients for Blood Safety as directed by NACP
2 Average Sales from July 01, 2000 to February 28, 2001 
3 NEED TO UPDATE TO MARCH 31, 2001
4 Includes any expected shipments or donations from any source.
5 Includes Losses and Adjustments to Inventory
<table>
<thead>
<tr>
<th>Drug Product</th>
<th>01-Jul-01</th>
<th>To Date</th>
<th>To Date</th>
<th>To Date</th>
<th>To Date</th>
<th>30-Jun-02</th>
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<td>Benzathine Penicillin dry powder for injection</td>
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<td>Ceftriaxone powder for lnj. (250 mg i.m., Stat)</td>
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<td>0</td>
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<tr>
<td>Clotrimazole Cream 1% 20 g</td>
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<td>Clotrimazole 100 mg Pessary</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Co-trimoxazole 400mg/80mg tablet</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>Doxycycline 100 mg capsule</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Erythromycin 250 mg tablet p.o.</td>
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</tr>
<tr>
<td>Erythromycin dry powder for syrup, (125 mg/5ml 100ml bottle)</td>
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<td>0</td>
<td>0</td>
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<td>Erythromycin eye ointment 0.5%, 5 g (q6h)</td>
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<td>0</td>
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<td>Kanamycin (acid sulphate) powder for Injection</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Kanamycin Injection (sulphate) (25mg/kg stat)</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Metronidazole 250 mg tablet</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Oxytetracycline eye ointment 1.0%, 5g tube (20d/tube)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Podophyline 10% in water/60 ml (10 doses/bottle)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>Silver Nitrate 75%, Single Use Tips (100/box)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Not Stocked</td>
</tr>
<tr>
<td>Water for Injection 5 ml</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Water for Injection 10 ml</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Description of Item</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vironostika Uniform II HIV 1/2 plus 0 [Organon ELISA]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>59 Kits</td>
<td>MSD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>391 Kits</td>
<td>NACP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Enzygnost HIV 1 / HIV 2 plus (Behring ELISA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>&quot;Capillus&quot; HIV 1/HIV 2 Test Kit</td>
<td>Fast User = 100/Kit</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>250 Kits</td>
<td>MSD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2,289 Kits</td>
<td>* NACP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>&quot;Capillus&quot; HIV 1/HIV 2 Test Kit</td>
<td>Slow User = 20/Kit</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>&quot;Determine&quot; HIV 1/2 Test Kit</td>
<td>Fast User = 100/Kit</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>&quot;Determine&quot; HIV 1/2 Test Kit</td>
<td>Slow User = 20/Kit</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rapid Plasma Reagin (RPR) Syphilis Antigen Test (100/kit)</td>
<td>0</td>
<td>MSD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2,357 Kits</td>
<td>NACP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

1 Include any expected shipments or donations from any source.
### TABLE 3.1: Estimated Requirements and Cost Estimate for HIV Test Kits and Expendable Medical Supplies for BLOOD SAFETY.

**TANZANIA  July 2001 - June 2002**

<table>
<thead>
<tr>
<th>Description of Item</th>
<th>Year 2000 Estimated No. of Tests</th>
<th>Year 2001 Projected No. of Tests¹</th>
<th>No. Units Required Per Test</th>
<th>Quantity to Order² [Total No. Basic Units]</th>
<th>Unit Size</th>
<th>Quantity to Order [Rounded to Unit Size]</th>
<th>Unit Cost ($US)²</th>
<th>Unit Size Cost ($US)²</th>
<th>Total Cost ($US)²</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>HIV Test Kits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td><strong>Vironostika Uniform II HIV 1/2 plus 0 [Organon ELISA]</strong></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>192</td>
<td>0</td>
<td>$230.51</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>2</td>
<td><em>Enzygnost HIV 1 / HIV 2 plus (Behring ELISA)</em></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>192</td>
<td>0</td>
<td>$250.84</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>3</td>
<td>&quot;Capillus&quot; HIV 1/HIV 2 Test Kit Fast User = 100/Kit</td>
<td>448,598</td>
<td>1</td>
<td>644,859</td>
<td>100</td>
<td>6,449</td>
<td>$154.66</td>
<td>$997,386</td>
<td>$997,386</td>
</tr>
<tr>
<td>4</td>
<td>*&quot;Capillus&quot; HIV 1/HIV 2 Test Kit Slow User = 20/Kit</td>
<td>1</td>
<td></td>
<td></td>
<td>20</td>
<td>0</td>
<td>$0</td>
<td></td>
<td>$0</td>
</tr>
<tr>
<td>5</td>
<td>&quot;Determine&quot; HIV 1/2 Test Kit Fast User = 100/Kit</td>
<td>TBD</td>
<td>1</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>$155.67</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>6</td>
<td>&quot;Determine&quot; HIV 1/2 Test Kit Slow User = 20/Kit</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>$0</td>
<td></td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td><strong>Total Number HIV Tests</strong></td>
<td>448,598</td>
<td>644,859</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>SUB TOTAL (US$)</strong></td>
<td>$997,386</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Expendable Medical Supplies</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>*** Lancets [for whole blood finger prick assay with &quot;Determine&quot;]</td>
<td>1</td>
<td>200</td>
<td>0</td>
<td></td>
<td></td>
<td>$3.74</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>8</td>
<td>*EDTA Capillary Tubes (for whole blood finger prick assay)</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
<td>$14.94</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td><strong>For testing with ELISA Tests and &quot;Capillus&quot; &amp; &quot;Determine&quot; Rapid Assay Tests</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Pipette Tips (Small) 5 - 40 microliter [for venipuncture assay]</td>
<td><em>Needed?</em></td>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
<td>$1.87</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>10</td>
<td>Pipette Tips (Big) 40 - 200 microliter [for venipuncture assay]</td>
<td>448,598</td>
<td>1</td>
<td>644,859</td>
<td>100</td>
<td>6,449</td>
<td>$1.87</td>
<td>$12,047</td>
<td>$12,047</td>
</tr>
<tr>
<td>11</td>
<td>Pasteur Pipettes graduated with bulb, Non-Sterile/Disposable Plastic [for venipuncture assay]</td>
<td>448,598</td>
<td>1</td>
<td>644,859</td>
<td>500</td>
<td>1,290</td>
<td>$18.68</td>
<td>$24,097</td>
<td>$24,097</td>
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<tr>
<td>12</td>
<td>Vacutainers with Needles - 10ml</td>
<td>448,598</td>
<td>1</td>
<td>644,859</td>
<td>1000</td>
<td>645</td>
<td>$307.35</td>
<td>$198,239</td>
<td>$198,239</td>
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<tr>
<td></td>
<td>*Vacutainer plain/serum Tubes 4 ml [plastic]</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
<td>$0.12</td>
<td>$14.94</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td>*Vacutainer multi-sampler 21 Gauge needles</td>
<td>1</td>
<td>100</td>
<td>0</td>
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<td></td>
<td>$0.18</td>
<td>$18.18</td>
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</tr>
<tr>
<td>13</td>
<td>*Alcohol Swabs 70%</td>
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<td>644,859</td>
<td>100</td>
<td>6,449</td>
<td>$2.49</td>
<td>$16,062</td>
<td>$16,062</td>
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<tr>
<td>14</td>
<td>Absorbent Cotton Wool-500 Gm Roll [100 tests/Roll]</td>
<td>4,486</td>
<td>.01</td>
<td>6,449</td>
<td>1</td>
<td>6,449</td>
<td>$1.74</td>
<td>$11,244</td>
<td>$11,244</td>
</tr>
<tr>
<td>15</td>
<td>Disposable Latex Gloves Non-Sterile (Medium)</td>
<td>448,598</td>
<td>2</td>
<td>644,859</td>
<td>100</td>
<td>6,449</td>
<td>$2.99</td>
<td>$19,275</td>
<td>$19,275</td>
</tr>
<tr>
<td>16</td>
<td>Disposable Latex Gloves Non-Sterile (Large)</td>
<td>448,598</td>
<td>2</td>
<td>644,859</td>
<td>100</td>
<td>6,449</td>
<td>$2.99</td>
<td>$19,275</td>
<td>$19,275</td>
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<tr>
<td>17</td>
<td>Aprons (Disposable) 100/Box [1/day per Lab Tech?]</td>
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<td>$2.79</td>
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<td>18</td>
<td>Biohazard Discard Bags ?</td>
<td>?</td>
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<td>0</td>
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<td></td>
<td>?</td>
<td>$0</td>
<td>$0</td>
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<td>19</td>
<td>Sharps Containers ?</td>
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<td></td>
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<td>$0</td>
</tr>
<tr>
<td>20</td>
<td>*** Hypochlorite Disinfectant [JIK Chlorox Bleach 1 Liter]</td>
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<td>?</td>
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<tr>
<td></td>
<td><strong>SUB TOTAL (US$)</strong></td>
<td>$300,238</td>
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<td></td>
<td></td>
<td>$300,238</td>
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<tr>
<td></td>
<td><strong>TOTAL COST (US$)</strong></td>
<td>$1,297,625</td>
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<td></td>
<td>$1,297,625</td>
</tr>
</tbody>
</table>

* Not an MSD Stock Item. Prices from other sources (June 1998 proposal for integration of VCT into District Health Plans, Ocheng et al)

** Exchange Rate U.S.$ 1.00 = 803 Tsh. O2/2001

*** Local supplier prices

¹ Estimated number of HIV Tests to be performed for BLOOD SAFETY in MOH Facilities and Voluntary/Religious Hospitals and supplied through MSD and NACP.

² Includes quantities to cover 15% Wastage (including 10% for Quality Testing), 1.5 month Supplier Lead Time and 1.5 month Buffer Stock.
### TABLE 3.2: Estimated Requirements and Cost Estimate for HIV Test Kits and Expendable Medical Supplies for VOLUNTARY COUNSELING AND TESTING. TANZANIA  July 2001 - June 2002

<table>
<thead>
<tr>
<th>No.</th>
<th>Description of Item</th>
<th>Year 2000 Estimated No. of Tests</th>
<th>Year 2001 Projected No. of Tests</th>
<th>No. Units Required Per Test</th>
<th>Quantity to Order</th>
<th>Unit Size</th>
<th>Total Cost (US$)**</th>
<th>Unit Cost ($US)**</th>
<th>Unit Size</th>
<th>Total Cost (US$)</th>
<th>Sub Total (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HIV Test Kits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Vironostika Uniform II HIV 1/2 plus 0 (Organon ELISA)</td>
<td>57,128</td>
<td>4,000</td>
<td>82,121 192 428</td>
<td>$230.51</td>
<td>$98,659</td>
<td>$4,841</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>For AMREF VCT Project - Year 1</td>
<td>2</td>
<td>4,000</td>
<td>82,121 192 21</td>
<td>$230.51</td>
<td>$98,659</td>
<td>$4,841</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Enzygnost HIV 1 / HIV 2 plus (Behring ELISA)</td>
<td>0</td>
<td>0</td>
<td>192 0</td>
<td>$250.84</td>
<td>$0</td>
<td>$0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>&quot;Capillus&quot; HIV 1/HIV 2 Test Kit Fast User = 100/Kit</td>
<td>75,168</td>
<td>1</td>
<td>108,054 100 1,081</td>
<td>$154.66</td>
<td>$167,185</td>
<td>$0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>&quot;Capillus&quot; HIV 1/HIV 2 Test Kit Slow User = 20/Kit</td>
<td>1</td>
<td>0</td>
<td>20 0</td>
<td>$0</td>
<td></td>
<td>$0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For AMREF VCT Project - Year 1</td>
<td>10,000</td>
<td>1</td>
<td>10,000 100 100</td>
<td>$154.66</td>
<td>$167,185</td>
<td>$0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>&quot;Determine&quot; HIV 1/2 Test Kit Fast User = 100/Kit</td>
<td>TBD</td>
<td>0</td>
<td>100 0</td>
<td>$155.67</td>
<td>$0</td>
<td>$0</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>&quot;Determine&quot; HIV 1/2 Test Kit Slow User = 20/Kit</td>
<td>TBD</td>
<td>0</td>
<td>20 0</td>
<td>$0</td>
<td></td>
<td>$0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sub Total HIV Test Kits AMREF VCT Project, Year 1</td>
<td>14,000</td>
<td></td>
<td></td>
<td>$20,306</td>
<td></td>
<td>$286,150</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Expendable Medical Supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>For testing with &quot;Determine&quot; HIV 1/2 Test Kit</td>
<td>1</td>
<td>200</td>
<td>0</td>
<td>$3.74</td>
<td>$0</td>
<td>$0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>&quot;EDTA&quot; Capillary Tubes (for whole blood finger prick assay)</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td>$14.94</td>
<td>$0</td>
<td>$0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sub Total AMREF VCT Project - Year 1</td>
<td>14,000</td>
<td></td>
<td></td>
<td>$20,306</td>
<td></td>
<td>$286,150</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Exchange Rate** U.S.$ 1.00 = 803 Tsh. O2/2001

1 Includes quantities for Confirmatory Testing and to cover 15% Wastage (includes 10% for Quality Testing), Supplier Lead Time and Buffer Stock.

2 Estimated number of HIV Tests to be performed for VOLUNTARY COUNSELING & TESTING in MOH Facilities and Voluntary/Religious Hospitals and supplied through MSD.

3 Not an MSD Stock Item. Prices from other sources (June 1998 proposal for integration of VCT into District Health Plans, Ocheng et al)

4 Local supplier prices

5 Includes quantities for Confirmatory Testing and to cover 15% Wastage (includes 10% for Quality Testing), Supplier Lead Time and Buffer Stock.
**TABLE 3.3: Estimated Requirements and Cost Estimate for HIV Test Kits, RPR Syphilis Antigen Tests and Expendable Medical Supplies for HIV and SYPHILIS SENTINEL SURVEILLANCE. TANZANIA July 2001 - 2002**

<table>
<thead>
<tr>
<th>Description of Item</th>
<th>Year 2000 Estimated No. of Tests</th>
<th>Year 2001 Projected No. of Tests¹</th>
<th>No. Units Required Per Test</th>
<th>Quantity to Order² (Total No. Basic Units)</th>
<th>Unit Size (Rounded to Unit Size)</th>
<th>Unit Cost (US)**</th>
<th>Unit Size (US)**</th>
<th>Total Cost (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIV Test Kits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Vironostika Uniform II HIV 1/2 plus 0 (Organon ELISA)</td>
<td>1,056</td>
<td>1</td>
<td>1,214</td>
<td>192</td>
<td>7</td>
<td>$230.51</td>
<td>$1,614</td>
</tr>
<tr>
<td>2</td>
<td>*Enzygnost HIV 1 / HIV 2 plus (Behring ELISA)</td>
<td>6,600</td>
<td>1</td>
<td>7,590</td>
<td>192</td>
<td>40</td>
<td>$250.84</td>
<td>$10,033</td>
</tr>
<tr>
<td>3</td>
<td>*** RPR Syphilis Antigen Test (Sentinel Surveillance)</td>
<td>6,600</td>
<td>1</td>
<td>7,590</td>
<td>100</td>
<td>76</td>
<td>$10.00</td>
<td>$760</td>
</tr>
<tr>
<td><strong>SUB TOTAL (US$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$12,407</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Expansible Medical Supplies</th>
<th>Year 2000 Estimated No. of Tests</th>
<th>Year 2001 Projected No. of Tests¹</th>
<th>No. Units Required Per Test</th>
<th>Quantity to Order² (Total No. Basic Units)</th>
<th>Unit Size (Rounded to Unit Size)</th>
<th>Unit Cost (US)**</th>
<th>Unit Size (US)**</th>
<th>Total Cost (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Vacutainers with Needles - 10ml</td>
<td>6,600</td>
<td>1</td>
<td>6,600</td>
<td>1,000</td>
<td>7</td>
<td>$307.35</td>
<td>$2,151</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>*Vacutainer plain/serum Tubes 4 ml [plastic]</td>
<td>1</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>$0.12</td>
<td>$19.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>*Vacutainer multi-sampler 21 Gauge needles</td>
<td>1</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>$0.18</td>
<td>$19.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>*Alcohol Swabs 70%</td>
<td>6,600</td>
<td>1</td>
<td>6,600</td>
<td>100</td>
<td>66</td>
<td>$2.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Absorbent Cotton Wool 500 Gm (Mol)</td>
<td>6,600</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>$1.74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Disposable Latex Gloves Non-Sterile (Medium)</td>
<td>6,600</td>
<td>2</td>
<td>100</td>
<td>0</td>
<td>$2.99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Disposable Latex Gloves Non-Sterile (Large)</td>
<td>6,600</td>
<td>2</td>
<td>100</td>
<td>0</td>
<td>$2.99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Aprons ( Disposable) 100/Box</td>
<td>100</td>
<td>0</td>
<td>1</td>
<td>?</td>
<td>$1.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Biohazard Discard Bags</td>
<td>?</td>
<td>100</td>
<td>0</td>
<td>$?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Sharp Containers</td>
<td>?</td>
<td>?</td>
<td>$?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>*** Hypochlorite Disinfectant [JIK Chlorox Bleach 1 Liter]</td>
<td>1</td>
<td>1</td>
<td>?</td>
<td>$1.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For ELISA Tests to be sent to Regional Laboratory

<table>
<thead>
<tr>
<th>No.</th>
<th>Description of Item</th>
<th>Year 2000 Estimated No. of Tests</th>
<th>Year 2001 Projected No. of Tests¹</th>
<th>No. Units Required Per Test</th>
<th>Quantity to Order² (Total No. Basic Units)</th>
<th>Unit Size (Rounded to Unit Size)</th>
<th>Unit Cost (US)**</th>
<th>Unit Size (US)**</th>
<th>Total Cost (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Filter paper serum/blood collection (cut to 54mm X 75mm),250mm</td>
<td>6,600</td>
<td>.20</td>
<td>100</td>
<td>0</td>
<td>$10.40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>*Polythene Self Sealing Bags (61mm x 92mm)</td>
<td>6,600</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td>$12.45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>*Pre-addressed, pre-stamped envelopes</td>
<td>6,600</td>
<td>1</td>
<td>1</td>
<td>?</td>
<td>$0.62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>*Marker Pens - water resistant (Black) (1 per site)</td>
<td>1</td>
<td>24</td>
<td>24</td>
<td>1</td>
<td>$2.73</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For ELISA Testing in Regional Laboratory

<table>
<thead>
<tr>
<th>No.</th>
<th>Description of Item</th>
<th>Year 2000 Estimated No. of Tests</th>
<th>Year 2001 Projected No. of Tests¹</th>
<th>No. Units Required Per Test</th>
<th>Quantity to Order² (Total No. Basic Units)</th>
<th>Unit Size (Rounded to Unit Size)</th>
<th>Unit Cost (US)**</th>
<th>Unit Size (US)**</th>
<th>Total Cost (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Pipette Tips (Small) 5 - 40 microliter</td>
<td>Needed?</td>
<td>100</td>
<td>0</td>
<td>$1.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Pipette Tips (Big) 40 - 200 microliter</td>
<td>6,600</td>
<td>1</td>
<td>6,600</td>
<td>100</td>
<td>66</td>
<td>$1.87</td>
<td>$123</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Pasteur Pipettes graduated with bulb, Non-Sterile/ Disposable Plastic</td>
<td>6,600</td>
<td>1</td>
<td>6,600</td>
<td>500</td>
<td>13</td>
<td>$18.68</td>
<td>$243</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

- Not an MSD Stock Item. Prices from other sources (June 1998 proposal for integration of VCT into District Health Plans; Ocheng, Mwakagile, Hassan)
- **Exchange Rate** U.S.$ 1.00 = 803 Tsh. 02/2001
- Local supplier price.
- Estimated number of HIV and RPR Tests to be performed for SENTINEL SURVEILLANCE in MOH Facilities and supplied through MSD.
- Includes quantities for Confirmatory Testing and to cover 15% Wastage (includes 10% for Quality Testing).

* * *
TABLE 4: Summary COST ESTIMATE for HIV Test Kits and Expendable Medical Supplies to Support HIV Testing
TANZANIA July 2001 - June 2002

<table>
<thead>
<tr>
<th>Total ($US)</th>
<th>HIV Test Kits and Expendable Medical Supplies for Blood Safety</th>
<th>$1,297,625</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total ($US)</td>
<td>*HIV Test Kits and Expendable Medical Supplies for Voluntary Counseling &amp; Testing</td>
<td>$29,113</td>
</tr>
<tr>
<td>Total ($US)</td>
<td>HIV Test Kits and Expendable Medical Supplies for Sentinel Surveillance</td>
<td>$14,992</td>
</tr>
</tbody>
</table>

* HIV Test Kits and Expendable Medical Supplies to support AMREF Project to expand VCT services in selected sites for YEAR 1 only. Does NOT include VCT in Public Sector.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Laboratory Equipment [One Time Expense]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 ELISA Washer</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$3,000</td>
</tr>
<tr>
<td>32 ELISA Reader</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$9,600</td>
</tr>
<tr>
<td>33 ELISA Reader Printer</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$1,500</td>
</tr>
<tr>
<td>34 Cryotubes screw stopper self standing 48 X 12.5 mm</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$18.67</td>
</tr>
<tr>
<td>35 ELISA Reader Printer</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$7,000</td>
</tr>
<tr>
<td>36 Refrigerator</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$3,000</td>
</tr>
<tr>
<td>37 Capacillus Digital Reader (optional)</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>38 Single Channel Pipette</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>39 Multi Channel Pipette</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>40 Precision Pipette, step adjustable 5 - 40 microliter</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$100</td>
</tr>
<tr>
<td>41 Precision Pipette, step adjustable 40 - 200 microliter</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$100</td>
</tr>
<tr>
<td>42 Pipette Digital (Big) 0 - 1000</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>43 Vacutainer Needle holders (sleeves) X 2 per year (10/Pack)</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$14</td>
</tr>
<tr>
<td>44 Tourniquet (rubber) (5 per Facility)</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$3</td>
</tr>
<tr>
<td>45 Magnifying Glass</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$6</td>
</tr>
<tr>
<td>46 Laboratory Coats # Lab Technologists/Facility x 2 Coats/LT</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$5</td>
</tr>
<tr>
<td>47 Registration Book</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$6</td>
</tr>
<tr>
<td>48 Requisition Book</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>49 Receipt Books</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$2</td>
</tr>
<tr>
<td>50 Marker Pens (Black) - Water Resistant (2 per site)</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$3</td>
</tr>
<tr>
<td><strong>SUB TOTAL (US$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$0</strong></td>
</tr>
</tbody>
</table>

1 Assumes all HIV Testing Facilities that conduct ELISA tests also conduct Capillus HIV 1/2 Rapid Tests
2 Quantity Required determined by Inventory of Laboratory Equipment in Health Facilities and Assessment of Laboratory Technologist Skills
3 Unit Cost provided by NACP and AMREF Laboratory, January 2001.
4 Prices adapted from proposal for integration of VCT into District Health Plans; Ocheng, Mwakagile, Hassan 1998

**Cost for Clearing, Storage and Distribution (US$)**

**TOTAL COST (US$) Laboratory Equipment for HIV Testing (ELISA, Capillus and Determine Rapid Assay Tests)**
<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>Year 2000&lt;sup&gt;(a)&lt;/sup&gt; Estimated Number Episodes (12 Regions)</th>
<th>Year 2001&lt;sup&gt;(b)&lt;/sup&gt; Projected Number Episodes (20 Regions)</th>
<th>No. of Visit</th>
<th>Drug Product</th>
<th>Basic Unit</th>
<th>Basic Unit per Dose</th>
<th>No. Doses per Day</th>
<th>No. of Days</th>
<th>Basic Units per Episode</th>
<th>Total Basic Units Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>STD Syndrome</td>
<td>300,000</td>
<td>392,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1.0 Vaginal Discharge Syndrome (VDS) 30%</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Curdlike</td>
<td>90,000</td>
<td>117,600</td>
<td></td>
<td>1. Clotrimazole 100mg Pessary (200 mg o.d.)</td>
<td>Pessary</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>423,360</td>
</tr>
<tr>
<td></td>
<td>54,000</td>
<td>70,560</td>
<td>1st</td>
<td>1. Clotrimazole 100mg Pessary (200 mg o.d.)</td>
<td>Pessary</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>42,336</td>
</tr>
<tr>
<td></td>
<td>5,400</td>
<td>7,056</td>
<td>2nd</td>
<td>1. Clotrimazole 100mg Pessary (200 mg o.d.)</td>
<td>Pessary</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>4,234</td>
</tr>
<tr>
<td></td>
<td>540</td>
<td>706</td>
<td>3rd</td>
<td>1. Clotrimazole 100mg Pessary (200 mg o.d.)</td>
<td>Pessary</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>423,360</td>
</tr>
<tr>
<td><strong>1.2 Non-Curdlike</strong></td>
<td>36,000</td>
<td>47,040</td>
<td></td>
<td>1. Co-trimoxazole 400mg/80mg tabs</td>
<td>Tablet</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>30</td>
<td>987,840</td>
</tr>
<tr>
<td></td>
<td>25,190</td>
<td>32,928</td>
<td></td>
<td>1. Co-trimoxazole 400mg/80mg tabs</td>
<td>Tablet</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>30</td>
<td>987,840</td>
</tr>
<tr>
<td></td>
<td>10,800</td>
<td>14,112</td>
<td></td>
<td>2. Kanamycin 2g I.M. stat (2 x 1g/Vial)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>28,224</td>
</tr>
<tr>
<td></td>
<td>10,800</td>
<td>14,112</td>
<td></td>
<td>3. Water for Injection 5 ml (2 Vials)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>28,224</td>
</tr>
<tr>
<td></td>
<td>36,000</td>
<td>47,040</td>
<td></td>
<td>4. Doxycycline 100 mg capsule b.i.d. x 7 days</td>
<td>Capsule</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>658,560</td>
</tr>
<tr>
<td></td>
<td>36,000</td>
<td>47,040</td>
<td></td>
<td>5. Metronidazole 400 mg tab b.i.d. x 7 days</td>
<td>Tablet</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>658,560</td>
</tr>
<tr>
<td><strong>10% Revisit</strong></td>
<td>3,600</td>
<td>4,704</td>
<td></td>
<td>1. Co-trimoxazole 400mg/80mg tabs</td>
<td>Tablet</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>30</td>
<td>98,784</td>
</tr>
<tr>
<td><strong>10% Revisit</strong></td>
<td>2,520</td>
<td>3,293</td>
<td></td>
<td>1. Co-trimoxazole 400mg/80mg tabs</td>
<td>Tablet</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>30</td>
<td>98,784</td>
</tr>
<tr>
<td></td>
<td>1,080</td>
<td>1,411</td>
<td></td>
<td>2. Kanamycin 2g I.M. stat (2 x 1g/Vial)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2,822</td>
</tr>
<tr>
<td></td>
<td>1,080</td>
<td>1,411</td>
<td></td>
<td>3. Water for Injection 5 ml (2 Vials)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2,822</td>
</tr>
<tr>
<td></td>
<td>360</td>
<td>4,704</td>
<td></td>
<td>4. Doxycycline 100 mg capsule b.i.d. x 7 days</td>
<td>Capsule</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>658,560</td>
</tr>
<tr>
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<td>360</td>
<td>4,704</td>
<td></td>
<td>5. Metronidazole 400 mg tab b.i.d. x 7 days</td>
<td>Tablet</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>658,560</td>
</tr>
<tr>
<td><strong>See p.2</strong></td>
<td>360</td>
<td>470</td>
<td></td>
<td>1. Co-trimoxazole 400mg/80mg tabs</td>
<td>Tablet</td>
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<td>3</td>
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<td>Tablet</td>
<td>5</td>
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<td>14,112</td>
</tr>
<tr>
<td></td>
<td>108</td>
<td>141</td>
<td></td>
<td>2. Kanamycin 2g I.M. stat (2 x 1g/Vial)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>282</td>
</tr>
<tr>
<td></td>
<td>108</td>
<td>141</td>
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<td>3. Water for Injection 5 ml (2 Vials)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
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<td>282</td>
</tr>
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<td>360</td>
<td>470</td>
<td></td>
<td>4. Doxycycline 100 mg capsule b.i.d. x 7 days</td>
<td>Capsule</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>6,586</td>
</tr>
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<td>360</td>
<td>470</td>
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<td>5. Metronidazole 400 mg tab b.i.d. x 7 days</td>
<td>Tablet</td>
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<td>7</td>
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<td>6,586</td>
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<td>Year 2000 Estimated Number Episodes (12 Regions)</td>
<td>Year 2001 Projected Number Episodes (20 Regions)</td>
<td>No. of Visit</td>
<td>Drug Product</td>
<td>Basic Unit</td>
<td>Basic Unit per Dose</td>
<td>No. Doses per Day</td>
<td>No. of Days</td>
<td>Basic Units per Episode</td>
<td>Total Basic Units Needed</td>
</tr>
<tr>
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<td>-------------------------------------------------</td>
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<td>-------------</td>
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</tr>
<tr>
<td>STD Syndrome</td>
<td>300,000</td>
<td>392,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1.3 VDS in Pregnancy</td>
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</tr>
<tr>
<td>60% Treated</td>
<td>12,000</td>
<td>15,680</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70%</td>
<td></td>
<td></td>
<td></td>
<td>1. Erythromycin 500 mg tab p.o., t.i.d. x 7 days</td>
<td>Tablet</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>21</td>
<td>138,298</td>
</tr>
<tr>
<td>30%</td>
<td>2,160</td>
<td>2,822</td>
<td></td>
<td>2. Ceftriaxone 250 mg I.M. Stat</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2,822</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>3. Water for Injection 5 ml</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2,822</td>
</tr>
<tr>
<td>100%</td>
<td>7,200</td>
<td>9,408</td>
<td></td>
<td>4. Clotrimazole 100 mg Pessary (200 mg o.d.)</td>
<td>Pessary</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>56,448</td>
</tr>
<tr>
<td>2.0 Urethral Discharge Syndrome (UDS) 30%</td>
<td>90,000</td>
<td>117,600</td>
<td>1st</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% Treated</td>
<td>90,000</td>
<td>117,600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70%</td>
<td>63,000</td>
<td>82,320</td>
<td></td>
<td>1. Co-trimoxazole 400mg/80mg tabs</td>
<td>Tablets</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>30</td>
<td>2,469,600</td>
</tr>
<tr>
<td>30%</td>
<td>27,000</td>
<td>35,280</td>
<td></td>
<td>2. Kanamycin 2g I.M. stat (2 x 1g/Vial)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>70,560</td>
</tr>
<tr>
<td></td>
<td>27,000</td>
<td>35,280</td>
<td></td>
<td>3. Water for Injection 5 ml (2 Vials)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>70,560</td>
</tr>
<tr>
<td>100%</td>
<td>90,000</td>
<td>117,600</td>
<td></td>
<td>4. Doxycycline 100 mg capsule b.i.d. x 7 days</td>
<td>Capsule</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>1,646,400</td>
</tr>
<tr>
<td>10% Revisit</td>
<td>9,000</td>
<td>11,760</td>
<td>2nd</td>
<td></td>
<td>Capsule</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>115,248</td>
</tr>
<tr>
<td>70%</td>
<td>6,300</td>
<td>8,232</td>
<td></td>
<td>1. Doxycycline 100 mg capsule b.i.d. x 7 days</td>
<td>Capsule</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>115,248</td>
</tr>
<tr>
<td>30%</td>
<td>2,700</td>
<td>3,528</td>
<td></td>
<td>2. Kanamycin 2g I.M. stat (2 x 1g/Vial)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>7,056</td>
</tr>
<tr>
<td></td>
<td>2,700</td>
<td>3,528</td>
<td></td>
<td>3. Water for Injection 5 ml (2 Vials)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>7,056</td>
</tr>
<tr>
<td>100%</td>
<td>9,000</td>
<td>11,760</td>
<td></td>
<td>4. Metronidazole 400 mg tabs (2g stat)</td>
<td>Tablet</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>58,800</td>
</tr>
<tr>
<td>1% Revisit</td>
<td>900</td>
<td>1,176</td>
<td>3rd</td>
<td>1. Ceftriaxone 250 mg I.M. stat</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1,176</td>
</tr>
<tr>
<td></td>
<td>900</td>
<td>1,176</td>
<td></td>
<td>2. Water for Injection 5 ml</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1,176</td>
</tr>
<tr>
<td>DIAGNOSIS</td>
<td>Year 2000&lt;sup&gt;(a)&lt;/sup&gt; Estimated Number Episodes</td>
<td>Year 2001&lt;sup&gt;(b)&lt;/sup&gt; Projected Number Episodes&lt;sup&gt;(c)&lt;/sup&gt;</td>
<td>No. of Visit</td>
<td>Drug Product</td>
<td>Basic Unit</td>
<td>Basic Unit per Dose</td>
<td>No. Doses per Day</td>
<td>No. of Days</td>
<td>Basic Units per Episode</td>
<td>Total Basic Units Needed</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>--------------</td>
<td>-------------------------------------</td>
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<td>---------------------</td>
<td>---------------------</td>
<td>-------------</td>
<td>-------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>STD Syndrome</td>
<td>300,000</td>
<td>392,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.0 Pelvic Inflammatory Disease (PID) 20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90% Non-Pregnant</td>
<td>54,000</td>
<td>70,560</td>
<td>1st</td>
<td>1. Co-trimoxazole 400mg/80mg tabs</td>
<td>Tablets</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>30</td>
<td>1,481,760</td>
</tr>
<tr>
<td></td>
<td>37,800</td>
<td>49,392</td>
<td>2nd</td>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16,200</td>
<td>21,168</td>
<td>1st</td>
<td>2. Kanamycin 2g I.M. stat (2 x 1g/vial)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>42,336</td>
</tr>
<tr>
<td></td>
<td>16,200</td>
<td>21,168</td>
<td></td>
<td>3. Water for Injection 5 ml (2 Vials)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>42,336</td>
</tr>
<tr>
<td>100%</td>
<td>54,000</td>
<td>70,560</td>
<td></td>
<td>4. Doxycycline 100 mg capsule b.i.d. x 14 days</td>
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<td>1</td>
<td>2</td>
<td>14</td>
<td>28</td>
<td>1,975,680</td>
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<tr>
<td>100%</td>
<td>54,000</td>
<td>70,560</td>
<td></td>
<td>5. Metronidazole 400 mg tab b.i.d. x 7 days</td>
<td>Tablet</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>987,840</td>
</tr>
<tr>
<td>10% Revisit</td>
<td>5,400</td>
<td>7,056</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3,780</td>
<td>4,939</td>
<td>1st</td>
<td>1. Kanamycin 2g I.M. stat (2 x 1g/vial)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>14,112</td>
</tr>
<tr>
<td></td>
<td>3,780</td>
<td>4,939</td>
<td></td>
<td>2. Water for Injection 5 ml (2 Vials)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>9,878</td>
</tr>
<tr>
<td></td>
<td>1,620</td>
<td>2,117</td>
<td></td>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,620</td>
<td>2,117</td>
<td></td>
<td>3. Ceftriaxone 250 mg I.M. stat</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2,117</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>4. Water for Injection 5 ml</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2,117</td>
</tr>
<tr>
<td>10% Pregnant</td>
<td>6,000</td>
<td>7,840</td>
<td></td>
<td>1. Erythromycin 500 mg tab p.o., t.i.d. x 7 days</td>
<td>Tablet</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>21</td>
<td>115,248</td>
</tr>
<tr>
<td></td>
<td>4,200</td>
<td>5,488</td>
<td></td>
<td>OR</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>1,800</td>
<td>2,352</td>
<td></td>
<td>2. Ceftriaxone 250 mg I.M. stat</td>
<td>Vial</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>2,352</td>
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<td></td>
<td>1,800</td>
<td>2,352</td>
<td></td>
<td>3. Water for Injection 5 ml</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2,352</td>
</tr>
<tr>
<td>100%</td>
<td>6,000</td>
<td>7,840</td>
<td></td>
<td>4. Clotrimazole 100mg Pessary (200mg o.d.)</td>
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<td>2</td>
<td>3</td>
<td>6</td>
<td>47,040</td>
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<tr>
<td>4.0 Genital Ulcer Syndrome (GUS) 20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Male &amp; Female) 80% Treated</td>
<td>48,000</td>
<td>62,720</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99%</td>
<td>47,520</td>
<td>62,093</td>
<td>1st</td>
<td>1. Benzathine Benzylpenicillin dry powder for Injection 2.4 MU I.M. stat</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>62,093</td>
</tr>
<tr>
<td>99%</td>
<td>47,520</td>
<td>62,093</td>
<td></td>
<td>2. Water for Injection 10 ml</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>62,093</td>
</tr>
<tr>
<td>99%</td>
<td>47,520</td>
<td>62,093</td>
<td></td>
<td>3. Co-trimoxazole 400mg/80mg tabs</td>
<td>Tablet</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>30</td>
<td>1,862,784</td>
</tr>
<tr>
<td>1% Penicillin Allergy (Male &amp; Female)</td>
<td>480</td>
<td>627</td>
<td></td>
<td>1. Erythromycin 500 mg tab p.o., t.i.d. x 15 days</td>
<td>Tablet</td>
<td>1</td>
<td>3</td>
<td>15</td>
<td>45</td>
<td>28,224</td>
</tr>
<tr>
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<td>4,800</td>
<td>6,272</td>
<td>2nd</td>
<td>1. Erythromycin 500mg tab p.o., t.i.d. x 7 days</td>
<td>Tablet</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>21</td>
<td>131,712</td>
</tr>
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<td>Year 2001&lt;sup&gt;(b)&lt;/sup&gt; Projected Number Episodes&lt;sup&gt;(c)&lt;/sup&gt; (20 Regions)</td>
<td>No. of Visit</td>
<td>Drug Product</td>
<td>Basic Unit</td>
<td>No. Doses per Day</td>
<td>No. of Days</td>
<td>Basic Units per Episode</td>
<td>Total Basic Units Needed</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------------------------------------------</td>
<td>--------------------------------------------------------------------</td>
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<td>-------------------</td>
<td>------------</td>
<td>------------------------</td>
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<td></td>
</tr>
<tr>
<td>STD Syndrome</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.0 Neonatal Conjunctivitis</td>
<td>850,460</td>
<td>900,000</td>
<td>*ASK DR. N’YANGANI (<em>How is Total # Deliveries estimated? 4% pop is pregnant, how many deliver? In public sector?)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Deliveries</td>
<td>425,230</td>
<td>450,000</td>
<td>1st</td>
<td>1. Oxytetracycline eye ointment 1.0%, 5 g tube (10 doses/tube = 10 patients treated per tube)</td>
<td>Tube</td>
<td>0.1</td>
<td>1</td>
<td>1</td>
<td>0.1</td>
<td>45,000</td>
</tr>
<tr>
<td>50% receive Prophylaxis</td>
<td>42,523</td>
<td>45,000</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5% are Symptomatic</td>
<td>4,252</td>
<td>4,500</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>50% receive Treatment</td>
<td>21,262</td>
<td>22,500</td>
<td>1st</td>
<td>1. Erythromycin eye ointment 0.5%, 5 g tube (q6h) (1 tube per patient)</td>
<td>Tube</td>
<td>.05</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>22,500</td>
</tr>
<tr>
<td>1. Kanamycin I.M. injection, 72mg/ml (25mg/kg) stat</td>
<td>Ampoule</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>22,500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.126</td>
<td>2,250</td>
<td>2nd</td>
<td>1. Erythromycin eye ointment 0.5%, 5 g tube (q6h) (1 tube per patient)</td>
<td>Tube</td>
<td>.05</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2,250</td>
<td></td>
</tr>
<tr>
<td>2,126</td>
<td>2,250</td>
<td>2. Erythromycin dry powder for syrup, 50mg/kg (q6)</td>
<td>Bottle</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10% Revisit</td>
<td>212</td>
<td>225</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Erythromycin eye ointment 0.5%, 5 g tube (q6h) (1 tube per patient)</td>
<td>Tube</td>
<td>.05</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2,250</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Erythromycin dry powder for syrup, 50mg/kg (q6)</td>
<td>Bottle</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2,250</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.0 Painful Scrotal Swelling</td>
<td>7,500</td>
<td>8,000</td>
<td>DR. N’YANGANI <em>Where does Estimate come from?</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94.6% Treated</td>
<td>7,100</td>
<td>7,568</td>
<td>1. Co-trimoxazole 400/80mg tabs</td>
<td>Tablet</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>30</td>
<td>158,928</td>
<td></td>
</tr>
<tr>
<td>70%</td>
<td>4,970</td>
<td>5,298</td>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30%</td>
<td>2,130</td>
<td>2,270</td>
<td>2. Kanamycin 2g I.M. stat (2 x 1g/vial)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4,541</td>
<td></td>
</tr>
<tr>
<td>30%</td>
<td>2,130</td>
<td>2,270</td>
<td>3. Water for Injection 5 ml (2 Vials)</td>
<td>Vial</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4,541</td>
<td></td>
</tr>
<tr>
<td>100%</td>
<td>7,100</td>
<td>7,568</td>
<td>4. Doxycycline 100mg capsule b.i.d.. x 7 days</td>
<td>Capsule</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>14</td>
<td>105,952</td>
<td></td>
</tr>
<tr>
<td>7.0 Balanoposthitis</td>
<td>4,500</td>
<td>5,000</td>
<td>DR. N’YANGANI <em>Where does Estimate come from?</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96.6% Treated</td>
<td>4,350</td>
<td>4833</td>
<td>1. Clotrimazole Cream 1% 20g</td>
<td>Tube</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4,833</td>
<td></td>
</tr>
<tr>
<td>8.0 Others including Genital Warts</td>
<td>3,000</td>
<td>4,000</td>
<td>DR. N’YANGANI <em>Where does Estimate come from?</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>87% Treated</td>
<td>2,800</td>
<td>3,480</td>
<td>1. Silver Nitrate 75%, Single Use Tips</td>
<td>Single Tip</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3,480</td>
<td></td>
</tr>
<tr>
<td>13% Treated</td>
<td>400</td>
<td>520</td>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Podophyline 10% in Water, 60 ml/bottle (10 doses/bottle, 3 doses per patient)</td>
<td>Bottle</td>
<td>0.1</td>
<td>1</td>
<td>3</td>
<td>0.3</td>
<td>156</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIAGNOSIS</td>
<td>Year 2000 Estimated Number Episodes (12 Regions)</td>
<td>Year 2001 Projected Number Episodes (20 Regions)</td>
<td>No. of Visit</td>
<td>Drug Product/Item</td>
<td>Basic Unit</td>
<td>Basic Unit per Dose</td>
<td>No. Doses per Day</td>
<td>No. of Days</td>
<td>Basic Units per Episode</td>
<td>Total Basic Units Needed</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>--------------</td>
<td>-----------------------------------------------</td>
<td>------------</td>
<td>---------------------</td>
<td>-------------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Estimated No. Pregnant Women Screened (a)</td>
<td>128,000</td>
<td>200,000</td>
<td></td>
<td>Rapid Plasma Reagin (RPR) Syphilis Antigen Test</td>
<td>Slide</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>200,000</td>
</tr>
<tr>
<td>Syphilis Prevalence 10% (+ Reactive RPR)</td>
<td>12,800</td>
<td>20,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% Treated</td>
<td>12,800</td>
<td>20,000</td>
<td></td>
<td>1. Benzathine Benzylpenicillin dry powder for Injection, 2.4 MU I.M. stat</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>19,800</td>
</tr>
<tr>
<td></td>
<td>12,672</td>
<td>19,800</td>
<td></td>
<td>2. Water for Injection, 10 ml</td>
<td>Vial</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>19,800</td>
</tr>
<tr>
<td></td>
<td>12,672</td>
<td>19,800</td>
<td></td>
<td>3. Syringe 10 ml and 21 Gauge needle</td>
<td>Syringe/Needle</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>19,800</td>
</tr>
<tr>
<td>1% Penicillin Allergy (Pregnant Women)</td>
<td>128</td>
<td>200</td>
<td></td>
<td>4. Erythromycin 500mg tab, p.o., t.i.d. x 15 days</td>
<td>Tablet</td>
<td>1</td>
<td>3</td>
<td>15</td>
<td>45</td>
<td>9,000</td>
</tr>
</tbody>
</table>

(a) Year 2000 Estimated Number of Episodes estimated by NACP STD Control & Prevention Project
(b) Year 2001 = July 2001 - June 2002
(c) Year 2001 Projected Number of Episodes are Population Based estimates
(d) 4% of population pregnant/year, therefore # population with STDs that are pregnant = 300,000 X .04 = 12,000
(e) Estimated No. Pregnant Women Screened = Estimated No. RPR Tests Needed
<table>
<thead>
<tr>
<th>Drug Product</th>
<th>Total Basic Units Needed</th>
<th>Adjust for Quality Testing 10%</th>
<th>Adjust for Losses/ Wastage 5%</th>
<th>AMQR</th>
<th>AMQR X LT</th>
<th>2 X LT</th>
<th>Lead Time Plus Buffer Stock</th>
<th>Stock on Hand and Quantity on Order</th>
<th>Quantity to Order [Total No. Basic Units]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzathine Penicillin dry powder for Injection *</td>
<td>81,893</td>
<td>85,987</td>
<td>7,166</td>
<td>21,498</td>
<td>42,996</td>
<td>0</td>
<td>128,983</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceftriaxone powder for Inj. (250 mg I.M. stat)</td>
<td>8,467</td>
<td>8,891</td>
<td>741</td>
<td>2,223</td>
<td>4,446</td>
<td>0</td>
<td>13,337</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clotrimazole Cream 1% 20 g</td>
<td>4,833</td>
<td>5,075</td>
<td>423</td>
<td>1,269</td>
<td>2,538</td>
<td>0</td>
<td>7,613</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clotrimazole 100 mg Pessary</td>
<td>573,418</td>
<td>602,088</td>
<td>50,174</td>
<td>150,522</td>
<td>301,044</td>
<td>0</td>
<td>903,132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-trimoxazole 400mg/80mg tablet</td>
<td>7,073,808</td>
<td>7,427,498</td>
<td>618,958</td>
<td>1,856,874</td>
<td>3,713,748</td>
<td>0</td>
<td>11,141,246</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doxycycline 100 mg capsule</td>
<td>4,574,282</td>
<td>4,802,996</td>
<td>400,250</td>
<td>1,200,750</td>
<td>2,401,500</td>
<td>0</td>
<td>7,204,496</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythromycin 500 mg tablet p.o. [applied MSD price for 250 mg tab]</td>
<td>422,482</td>
<td>443,606</td>
<td>36,967</td>
<td>110,901</td>
<td>221,802</td>
<td>0</td>
<td>665,408</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythromycin dry powder for syrup, (125 mg/5ml 100ml bottle)</td>
<td>2,250</td>
<td>2,363</td>
<td>197</td>
<td>591</td>
<td>1,182</td>
<td>0</td>
<td>3,545</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythromycin eye ointment 0.5%, 5 g (q6h)</td>
<td>24,750</td>
<td>25,988</td>
<td>2,166</td>
<td>6,498</td>
<td>12,996</td>
<td>0</td>
<td>38,984</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kanamycin (acid sulphate) powder for Injection, 2g [2 x 1g Vial from MSD]</td>
<td>169,933</td>
<td>178,430</td>
<td>14,869</td>
<td>44,607</td>
<td>89,214</td>
<td>0</td>
<td>267,644</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kanamycin injection (sulphate) 72mg/ml (25mg/kg) stat</td>
<td>22,500</td>
<td>23,625</td>
<td>1,969</td>
<td>5,907</td>
<td>11,814</td>
<td>0</td>
<td>35,439</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metronidazole 400 mg tablet [applied MSD price for 250 mg tab]</td>
<td>1,777,642</td>
<td>1,866,524</td>
<td>155,544</td>
<td>466,632</td>
<td>933,264</td>
<td>0</td>
<td>2,799,788</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxytetracycline eye ointment 1.0%, 5g tube (10 doses/tube)</td>
<td>45,000</td>
<td>47,250</td>
<td>3,938</td>
<td>11,814</td>
<td>23,628</td>
<td>0</td>
<td>70,878</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Podophyline 10% in water/60 ml (10 doses/bottle)</td>
<td>156</td>
<td>164</td>
<td>14</td>
<td>42</td>
<td>84</td>
<td>0</td>
<td>248</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver Nitrate 75%, Single Use Tips (100box)</td>
<td>3,480</td>
<td>3,654</td>
<td>305</td>
<td>915</td>
<td>1,830</td>
<td>0</td>
<td>5,484</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water for Injection 5 ml [applied MSD price for 10ml Vial]</td>
<td>174,167</td>
<td>182,875</td>
<td>15,240</td>
<td>45,720</td>
<td>91,440</td>
<td>0</td>
<td>274,315</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water for Injection 10 ml</td>
<td>81,893</td>
<td>85,987</td>
<td>7,166</td>
<td>21,498</td>
<td>42,996</td>
<td>0</td>
<td>128,983</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Includes drugs for Syndromic Mgmt of GUS and Syphilis detected via RPR.
1 Lead Time = The time from preparation of the order, to approval, procurement, shipment to or within country, customs clearance, and time in central warehouse for reception, inspection, storage and packaging until ready for distribution.
2 For the purposes of this quantification, supplier Lead Time is assumed to be 3 months for local procurement.
3 For the purposes of this quantification, Buffer Stock = 1 Lead Time, therefore Lead Time + Buffer Stock = 2 Lead Times
4 Current Stock on Hand is assumed to be zero given reported shortages and stockouts. Therefore, additional quantities of product are required to cover Lead Time and Buffer Stock.
<table>
<thead>
<tr>
<th>Description of Item</th>
<th>Total Basic Units Needed</th>
<th>Adjust for Quality Testing 10%</th>
<th>Adjust for Losses/Wastage 5%</th>
<th>Average Monthly Quantity Required</th>
<th>AMQR X Supplier Lead Time in Months</th>
<th>Lead Time Plus Buffer Stock</th>
<th>Stock on Hand and Quantity on Order</th>
<th>Quantity to Order [Total No. Basic Units]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Laboratory Tests and Reagents</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid Plasma Reagin (RPR) Syphilis Antigen Test</td>
<td>200,000</td>
<td>210,000</td>
<td>17,500</td>
<td>52,500</td>
<td>105,000</td>
<td>0</td>
<td>315,000</td>
<td></td>
</tr>
<tr>
<td>Vironostika Uniform II HIV 1/2 plus 0 (Organon ELISA)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Expendable Medical Supplies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacutainer Tubes with Needles - 10 ml (for blood draw for RPR)</td>
<td>200,000</td>
<td>210,000</td>
<td>17,500</td>
<td>52,500</td>
<td>105,000</td>
<td>0</td>
<td>315,000</td>
<td></td>
</tr>
<tr>
<td>10 ml Syringes and 21 Gauge Needles packed together</td>
<td>81,893</td>
<td>85,987</td>
<td>7,166</td>
<td>21,498</td>
<td>42,996</td>
<td>0</td>
<td>128,983</td>
<td></td>
</tr>
<tr>
<td>5 ml Syringes and 21 Gauge Needles packed together</td>
<td>174,167</td>
<td>182,875</td>
<td>15,240</td>
<td>45,720</td>
<td>91,440</td>
<td>0</td>
<td>274,315</td>
<td></td>
</tr>
<tr>
<td>Gloves, Examination Latex Disposable/Non-Sterile (LG) [EU proposal price]</td>
<td>5,000</td>
<td>5,250</td>
<td>438</td>
<td>1,314</td>
<td>2,628</td>
<td>0</td>
<td>7,878</td>
<td></td>
</tr>
<tr>
<td>Gloves, Examination Latex Disposable/Non-Sterile (MED) [EU proposal price]</td>
<td>5,000</td>
<td>5,250</td>
<td>438</td>
<td>1,314</td>
<td>2,628</td>
<td>0</td>
<td>7,878</td>
<td></td>
</tr>
<tr>
<td>Cotton Wool Absorbent Swabs (7.5cm X 7.5cm, 9cm Ply) [EU proposal price]</td>
<td>250,000</td>
<td>262,500</td>
<td>21,875</td>
<td>65,625</td>
<td>131,250</td>
<td>0</td>
<td>393,750</td>
<td></td>
</tr>
<tr>
<td>Gauze hospital quality (9 X 8 mesh, 90/91cm width X 100m length) [EU price]</td>
<td>3,000</td>
<td>3,150</td>
<td>263</td>
<td>789</td>
<td>1,578</td>
<td>0</td>
<td>4,728</td>
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</tr>
<tr>
<td><strong>Equipment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speculum (stainless steel) for health facilities missed [SMALL]</td>
<td>300</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Speculum (stainless steel) for health facilities missed [MED]</td>
<td>300</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Speculum (stainless steel) for health facilities missed [LG]</td>
<td>300</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Forceps sponge-holding, straight (stainless steel)</td>
<td>300</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>300</td>
<td></td>
</tr>
</tbody>
</table>

1 Lead Time = The time from preparation of the order, to approval, procurement, shipment to or within country, customs clearance, and time in central warehouse for reception, inspection, storage and packaging until ready for distribution.
2 For the purposes of this quantification, supplier Lead Time is assumed to be 3 months for local procurement.
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4 Current Stock on Hand is assumed to be zero given reported shortages and stockouts. Therefore, additional quantities of product are required to cover Lead Time and Buffer Stock.
<table>
<thead>
<tr>
<th>No.</th>
<th>Description of Item</th>
<th>Drug  Product</th>
<th>Strength</th>
<th>Basic Unit</th>
<th>Quantity to Order</th>
<th>Unit Size</th>
<th>Unit Size (Rounded to Unit Size)</th>
<th>Basic Unit Cost (U.S.)</th>
<th>Unit Size Cost (U.S.)</th>
<th>TOTAL COST (U.S.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Benzathine Penicillin dry powder for Injection</td>
<td>(a) 2.4 MU. Vial</td>
<td>128,983</td>
<td>1</td>
<td>128,983</td>
<td>$0.37</td>
<td>$48,188</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ceftriaxone powder for Inj. (250 mg i.m., Stat)</td>
<td>(c) 250mg Vial</td>
<td>13,337</td>
<td>1</td>
<td>13,337</td>
<td>$1.25</td>
<td>$16,608</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Clotrimazole Cream 1% 20 g</td>
<td>(e) 1.00% Tube</td>
<td>7,613</td>
<td>1</td>
<td>7,613</td>
<td>$0.22</td>
<td>$1,706</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Clotrimazole 100 mg Pessary with applicator</td>
<td>(g) 100 mg Pessary</td>
<td>903,132</td>
<td>6</td>
<td>150,522</td>
<td>$0.35</td>
<td>$52,486</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Co-trimazole 400mg/80mg tablet</td>
<td>(d) 400/80mg Tablet</td>
<td>11,141,246</td>
<td>1000</td>
<td>11,141</td>
<td>$7.97</td>
<td>$88,795</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Doxycycline 100 mg capsule</td>
<td>(e) 100 mg Capsule</td>
<td>7,204,496</td>
<td>1000</td>
<td>7,204</td>
<td>$10.59</td>
<td>$76,257</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>*Erythromycin 500 mg tablet p.o. ² [MSD price for 250 mg tab]</td>
<td>(f) 500 mg Tablet</td>
<td>665,408</td>
<td>1000</td>
<td>665</td>
<td>$0.49</td>
<td>$27,221</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Erythromycin dry powder for syrup, (125 mg/5ml 100ml bottle)</td>
<td>(c) 125mg/5ml Bottle</td>
<td>3,545</td>
<td>1</td>
<td>3,545</td>
<td>$0.35</td>
<td>$1,721</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>*Erythromycin eye ointment 0.5%, 5 g (q6h) [EU proposal price]</td>
<td>(e) 0.5% Tube</td>
<td>267,644</td>
<td>1</td>
<td>267,644</td>
<td>$0.47</td>
<td>$126,656</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>*Kanamycin (acid sulphate) powder for Injection 2g [2 x 1g Vial]</td>
<td>(b) 1g Vial</td>
<td>267,644</td>
<td>1</td>
<td>267,644</td>
<td>$0.60</td>
<td>$162,656</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>*Kanamycin Injection (sulphate) 25mg/kg stat [EU proposal price]</td>
<td>(f) 72mg/2ml Ampoule</td>
<td>35,439</td>
<td>1</td>
<td>35,439</td>
<td>$0.47</td>
<td>$162,656</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>*Metronidazole 400 mg tablet [MSD price for 250 mg tab]</td>
<td>(c) 400 mg Tablet</td>
<td>7,204,496</td>
<td>1000</td>
<td>7,204</td>
<td>$3.49</td>
<td>$25,257</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Oxytetracycline eye ointment 1.0%, 5g tube (20/tube = .05 Tube)</td>
<td>(c) 1.0% Tube</td>
<td>70,878</td>
<td>1</td>
<td>70,878</td>
<td>$0.14</td>
<td>$10,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Podophyline 10% in water/60 ml (10 doses/bottle)</td>
<td>(f) 10% in water Bottle</td>
<td>248</td>
<td>1</td>
<td>248</td>
<td>$7.84</td>
<td>$1,924</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Silver Nitrates 75%, Single Use Tips</td>
<td>(e) 75% Single Tip</td>
<td>5,484</td>
<td>100</td>
<td>550</td>
<td>$3.84</td>
<td>$2,211</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>*Water for Injection 5 ml [apply MSD price for 10ml vial]</td>
<td>(a) 5 ml Vial</td>
<td>274,315</td>
<td>1000</td>
<td>2,743</td>
<td>$0.05</td>
<td>$13,665</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Water for Injection 10 ml</td>
<td>(a) 10 ml Vial</td>
<td>128,983</td>
<td>100</td>
<td>128,983</td>
<td>$0.05</td>
<td>$6,425</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Not an MSD Stock Item

<table>
<thead>
<tr>
<th>No.</th>
<th>Description of Item</th>
<th>Drug  Product</th>
<th>Strength</th>
<th>Basic Unit</th>
<th>Quantity to Order</th>
<th>Unit Size</th>
<th>Unit Size (Rounded to Unit Size)</th>
<th>Basic Unit Cost (U.S.)</th>
<th>Unit Size Cost (U.S.)</th>
<th>TOTAL COST (U.S.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Rapid Plasma Reagin (RPR) Syphilis Antigen Test (100/kit)</td>
<td>(a) Slide</td>
<td>315,000</td>
<td>100</td>
<td>3,150</td>
<td>$10.00</td>
<td>$31,500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Vironostika Uniform II HIV 1/2 plus 0 (Organon ELISA)</td>
<td>(a) Test</td>
<td>0</td>
<td>192</td>
<td>0</td>
<td>$230.51</td>
<td>$44,302</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description of Item</th>
<th>Drug  Product</th>
<th>Strength</th>
<th>Basic Unit</th>
<th>Quantity to Order</th>
<th>Unit Size</th>
<th>Unit Size (Rounded to Unit Size)</th>
<th>Basic Unit Cost (U.S.)</th>
<th>Unit Size Cost (U.S.)</th>
<th>TOTAL COST (U.S.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Vacutainer Tubes with Needles - 10 ml</td>
<td>(a) 10 ml Tube/Needle</td>
<td>315,000</td>
<td>1000</td>
<td>315</td>
<td>$307.35</td>
<td>$96,814</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>10 ml Syringes and 21 Gauge Needles packed together</td>
<td>(a) 10ml Syringe/Needle</td>
<td>128,983</td>
<td>100</td>
<td>1,290</td>
<td>$7.47</td>
<td>$9,399</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>5 ml Syringes and 21 Gauge Needles packed together</td>
<td>(a) 5ml Syringe/Needle</td>
<td>274,315</td>
<td>100</td>
<td>2,743</td>
<td>$4.98</td>
<td>$13,664</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Gloves, Examination Latex Disposable/Non-Sterile (Large)</td>
<td>(b) Large Box</td>
<td>7,878</td>
<td>100</td>
<td>79</td>
<td>$2.99</td>
<td>$236</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Gloves, Examination Latex Disposable/Non-Sterile (Medium)</td>
<td>(b) Medium Box</td>
<td>7,878</td>
<td>100</td>
<td>79</td>
<td>$2.99</td>
<td>$236</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>*Cotton Wool Absorbent Swabs (7.5cm X 7.5cm, 9cm Ply) [EU proposal price]</td>
<td>(a) 9cm Ply Box</td>
<td>393,750</td>
<td>100</td>
<td>3,938</td>
<td>$2.00</td>
<td>$7,876</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Gauze hospital quality (9 X 8 mesh, 90/91cm wide X 100m long)</td>
<td>(a) 500gm Roll</td>
<td>4,728</td>
<td>1</td>
<td>4,728</td>
<td>$1.52</td>
<td>$7,183</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Speculum (stainless steel) for health facilities missed [SMALL]</td>
<td>(a) Small each</td>
<td>300</td>
<td>1</td>
<td>300</td>
<td>$5.13</td>
<td>$1,539</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Speculum (stainless steel) for health facilities missed [MED]</td>
<td>(a) Medium each</td>
<td>300</td>
<td>1</td>
<td>300</td>
<td>$5.13</td>
<td>$1,539</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Speculum (stainless steel) for health facilities missed [LG]</td>
<td>(a) Large each</td>
<td>300</td>
<td>1</td>
<td>300</td>
<td>$5.13</td>
<td>$1,539</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Forceps sponge-holding, straight (stainless steel)</td>
<td>(a) 20 cm each</td>
<td>300</td>
<td>1</td>
<td>300</td>
<td>$2.49</td>
<td>$747</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Not an MSD Stock Item

**Exchange Rate U.S.$ 1.00 = 803 Tsh. O2/2001

1,2 Includes drugs for Syndromic Mgmt of GUS and Syphilis detected via RPR.
TABLE 9: QUANTITY TO ORDER and COST ESTIMATE for RPR Tests and Drugs for Syphilis Screening and Treatment of Pregnant Women at First Ante-natal Care Visit. TANZANIA July 2001 - June 2002

<table>
<thead>
<tr>
<th>Description of Item</th>
<th>Strength</th>
<th>Basic Unit</th>
<th>Quantity to Order</th>
<th>Unit Size</th>
<th>Unit Size</th>
<th>Unit Size</th>
<th>Unit Size</th>
<th>TOTAL COST</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Tests and Reagents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid Plasma Reagin (RPR) Syphilis Antigen Test</td>
<td>N/A</td>
<td>Slide</td>
<td>315,000</td>
<td>100</td>
<td>3,150</td>
<td></td>
<td>$10.00</td>
<td>$31,500</td>
<td></td>
</tr>
<tr>
<td>Expendable Medical Supplies &amp; Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacutainer Tubes with Needles - 10 ml</td>
<td>N/A</td>
<td>Tube/Needle</td>
<td>315,000</td>
<td>1000</td>
<td>315</td>
<td></td>
<td>$307.35</td>
<td>$96,814</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TOTAL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drug Product</th>
<th>Total Basic Units Needed</th>
<th>Adjust for Quality Testing 10%</th>
<th>Adjust for Losses/ Wastage 5%</th>
<th>Average Monthly Quantity Required</th>
<th>AMQR X Supplier Lead Time in Months</th>
<th>Lead Timeplus Buffer Stock</th>
<th>Stock on Hand &amp; Quantity on Order</th>
<th>Quantity to Order [Total No. Basic Units]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Benzathine Benzylpenicillin dry powder for Injection</td>
<td>19,800</td>
<td>20,790</td>
<td>1,733</td>
<td>5,199</td>
<td>10,398</td>
<td>31,188</td>
<td></td>
<td>31,188</td>
</tr>
<tr>
<td>2. Water for Injection, 10 ml</td>
<td>19,800</td>
<td>20,790</td>
<td>1,733</td>
<td>5,199</td>
<td>10,398</td>
<td>31,188</td>
<td></td>
<td>31,188</td>
</tr>
<tr>
<td>3. Syringe 10 ml and 21 Gauge Needle</td>
<td>19,800</td>
<td>20,790</td>
<td>1,733</td>
<td>5,199</td>
<td>10,398</td>
<td>31,188</td>
<td></td>
<td>31,188</td>
</tr>
<tr>
<td>4. Erythromycin 500mg tab [MSD price for 250 mg tab]</td>
<td>9,000</td>
<td>9,450</td>
<td>788</td>
<td>2,364</td>
<td>4,728</td>
<td>14,178</td>
<td></td>
<td>14,178</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drug Product</th>
<th>Strength</th>
<th>Basic Unit</th>
<th>Quantity to Order [Total No. Basic Units]</th>
<th>Unit Size</th>
<th>Quantity to Order [Rounded to Unit Size]</th>
<th>Basic Unit Cost ($ U.S.)</th>
<th>Unit Size Cost ($U.S.)</th>
<th>TOTAL COST ($ U.S.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Benzathine Benzylpenicillin dry powder for Injection</td>
<td>2.4 MU i.m.</td>
<td>Vial</td>
<td>31,188</td>
<td>1</td>
<td>31,188</td>
<td>$0.37</td>
<td>$11,652</td>
<td></td>
</tr>
<tr>
<td>2. Water for Injection, 10 ml</td>
<td>10ml</td>
<td>Vial</td>
<td>31,188</td>
<td>1</td>
<td>31,188</td>
<td>$0.05</td>
<td>$1,554</td>
<td></td>
</tr>
<tr>
<td>3. Syringe 10 ml and 21 Gauge Needle</td>
<td>Syringe/Needle</td>
<td>31,188</td>
<td>100</td>
<td>312</td>
<td></td>
<td>$7.47</td>
<td>$2,331</td>
<td></td>
</tr>
<tr>
<td>4. Erythromycin 500mg tab [MSD price for 250 mg tab]</td>
<td>500 mg</td>
<td>Tablet</td>
<td>14,178</td>
<td>1000</td>
<td>14</td>
<td></td>
<td>$40.93</td>
<td>$573</td>
</tr>
</tbody>
</table>

* Exchange Rate  U.S.$ 1.00 = 803 Tsh. 02/2001
1 For purposes of this quantification, supplier lead time is assumed to be 3 months for local procurement
2 Current Stock on Hand is assumed to be zero given shortages and stock-outs which have caused Syphilis screening in ANC clinics to come to a halt. Therefore additional quantities of product are required to cover supplier Lead Time, Buffer Stock and to fill the pipeline.
<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>Year 2001 Projected Number Episodes</th>
<th>Description of Item</th>
<th>Basic Unit</th>
<th>Basic Unit per Dose</th>
<th>Total Basic Units Needed</th>
<th>Quantity to Order*</th>
<th>TOTAL COST ($ U.S.) MSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated No. Pregnant Women Screened</td>
<td>200,000</td>
<td>Rapid Plasma Reagin (RPR) Syphilis Antigen Test Slide</td>
<td>1</td>
<td>200,000</td>
<td>315,000</td>
<td>$31,500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200,000</td>
<td>Vacutainer Tubes with Needles Tube/Needle</td>
<td>1</td>
<td>200,000</td>
<td>315,000</td>
<td>$96,814</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TOTAL</td>
<td>$128,314</td>
</tr>
<tr>
<td></td>
<td>20,000</td>
<td>Rapid Plasma Reagin (RPR) Syphilis Antigen Test Slide</td>
<td>1</td>
<td>19,800</td>
<td>31,188</td>
<td>$11,652</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20,000</td>
<td>Vacutainer Tubes with Needles Tube/Needle</td>
<td>1</td>
<td>19,800</td>
<td>31,188</td>
<td>$1,554</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20,000</td>
<td>Syringe 10 ml and 21 Gauge Needle Syringe/Needle</td>
<td>1</td>
<td>19,800</td>
<td>31,188</td>
<td>$2,331</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>Erythromycin 500mg tab p.o. [MSD price 250 mg] Tablet</td>
<td>1</td>
<td>9,000</td>
<td>14,178</td>
<td>$573</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TOTAL</td>
<td>$16,110</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GRAND TOTAL</td>
<td>$144,424</td>
</tr>
</tbody>
</table>

1 Year 2001 Projected Number of Episodes are Population Based estimates
2 Estimated No. Pregnant Women Screened = Estimated No. RPR Tests Needed

* For purposes of this quantification, supplier lead time is assumed to be 3 months for local procurement
Current Stock on Hand is assumed to be zero given shortages and stock- outs which have caused Syphilis screening in ANC clinics to come to a halt. Therefore, additional quantities of product are required to cover supplier Lead Time and to fill the pipeline
TABLE 11:
PUBLIC SECTOR CONDOMS REQUIRED FOR FAMILY PLANNING AND HIV/STI PREVENTION: TANZANIA 2001 - 2003

Supplier: UNFPA
Product: Male Condom
Brand: 52mm Non-colored, No Logo

CIF (Cost, Insurance and Sea Freight) = 25%

Current Cost Per Unit = 0.023 U.S. Dollars (includes 5% handling)
Inflation Rate = 1.03% per year

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Quantity Required (a)</th>
<th>Unit Price (b)</th>
<th>Total Unit Price (U.S. Dollars) (c)</th>
<th>CIF (% of Total Unit Price) (d)</th>
<th>Total CIF (U.S. Dollars) (e)</th>
<th>TOTAL PRICE (U.S. Dollars) (f)</th>
<th>Funded by UNFPA to date</th>
<th>Funding Outstanding to date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>January</td>
<td>10,000,000</td>
<td>0.023</td>
<td>$230,000</td>
<td>25.0%</td>
<td>$57,500</td>
<td>$287,500</td>
<td>$287,500</td>
<td>$287,500</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>10,000,000</td>
<td>0.023</td>
<td>$230,000</td>
<td>25.0%</td>
<td>$57,500</td>
<td>$287,500</td>
<td>$287,500</td>
<td>$287,500</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>10,000,000</td>
<td>0.023</td>
<td>$230,000</td>
<td>25.0%</td>
<td>$57,500</td>
<td>$287,500</td>
<td>$287,500</td>
<td>$287,500</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>10,000,000</td>
<td>0.023</td>
<td>$230,000</td>
<td>25.0%</td>
<td>$57,500</td>
<td>$287,500</td>
<td>$287,500</td>
<td>$287,500</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>10,000,000</td>
<td>0.023</td>
<td>$230,000</td>
<td>25.0%</td>
<td>$57,500</td>
<td>$287,500</td>
<td>$287,500</td>
<td>$287,500</td>
</tr>
<tr>
<td>2002</td>
<td>February</td>
<td>10,000,000</td>
<td>0.024</td>
<td>$236,900</td>
<td>25.0%</td>
<td>$59,225</td>
<td>$296,125</td>
<td>$296,125</td>
<td>$296,125</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>10,000,000</td>
<td>0.024</td>
<td>$236,900</td>
<td>25.0%</td>
<td>$59,225</td>
<td>$296,125</td>
<td>$296,125</td>
<td>$296,125</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>10,000,000</td>
<td>0.024</td>
<td>$240,000</td>
<td>25.0%</td>
<td>$60,000</td>
<td>$300,000</td>
<td>$300,000</td>
<td>$300,000</td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td>30,000,000</td>
<td>0.025</td>
<td>$741,600</td>
<td>25.0%</td>
<td>$185,400</td>
<td>$927,000</td>
<td>$927,000</td>
<td>$927,000</td>
</tr>
</tbody>
</table>

TOTAL COST Years 2001 - 2003 = $3,256,750 $3,256,750 $2,969,250
(as of April 2001)

(a) Taken from Contraceptive Procurement Tables (CPTs)
(b) Unit Price 0.023 ($US) includes 5% handling. Quoted by UNFPA/Tanzania from shipping invoice 12/2000.
(c) Takes into account an estimated inflation rate of 1.03% per year.
(d) Assumes CIF remains constant over the period 2001 - 2003
### Use of Modern Contraceptive Methods in Tanzania

**[Source: 1999 Reproductive and Child Health Survey]**

#### Women

**Age 15-49**

- **Any Modern Method:** 15.6% of which 3.5% is Male Condom

#### Men

**Age 15-59**

- **Any Modern Method:** 20.8% of which 12.0% is Male Condom

#### Source of Supply for Contraceptive Methods

<table>
<thead>
<tr>
<th>Source</th>
<th>All Modern Methods</th>
<th>of which % Male Condom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Sector</td>
<td>67.2%</td>
<td>18.1%</td>
</tr>
<tr>
<td>Private Medical</td>
<td>21.8%</td>
<td>38.8%</td>
</tr>
<tr>
<td>Other Private</td>
<td>10.5%</td>
<td>42.2%</td>
</tr>
</tbody>
</table>

*mostly Pharmacies*
### History of Public Sector Condom Distribution:

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimated Quantities Distributed (in Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>22.0</td>
</tr>
<tr>
<td>1994</td>
<td>23.8</td>
</tr>
<tr>
<td>1995</td>
<td>*12.7 * Sharp drop in Distribution related to delayed shipments and lack of distribution resources at NACP.</td>
</tr>
<tr>
<td>**1996</td>
<td>17.8 ** From 1996 on, Quantities Distributed include condoms for Family Planning and HIV/STD Prevention</td>
</tr>
<tr>
<td>1997</td>
<td>17.7</td>
</tr>
<tr>
<td>1998</td>
<td>19.5</td>
</tr>
<tr>
<td>1999</td>
<td>21.8</td>
</tr>
<tr>
<td>2000</td>
<td>26.8</td>
</tr>
</tbody>
</table>

### PSI Social Marketing of Condoms ***:

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimated Quantities Distributed (in Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>*** Currently sold at 50 Tsh for 3 condoms.</td>
</tr>
<tr>
<td>1997</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>18,310,464</td>
</tr>
<tr>
<td>2000</td>
<td>19.3 million Estimated</td>
</tr>
<tr>
<td>2001</td>
<td>19.0 million Projected</td>
</tr>
</tbody>
</table>
Ministry of Health, United Republic of TANZANIA [Updated May 2001]

<table>
<thead>
<tr>
<th>HIV TEST KITS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIV Test Kits and Expendable Medical Supplies for BLOOD SAFETY</strong></td>
<td>$1,297,625</td>
</tr>
<tr>
<td>**HIV Test Kits and Expendable Medical Supplies for VOLUNTARY COUNSELING AND TESTING ***</td>
<td>$29,113</td>
</tr>
<tr>
<td><strong>HIV Test Kits, RPR Syphilis Antigen Tests and Expendable Medical Supplies for SENTINEL SURVEILLANCE</strong></td>
<td>$14,992</td>
</tr>
<tr>
<td><strong>TOTAL COST (US$)</strong></td>
<td><strong>$1,341,730</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STD DRUGS FOR SYNDROMIC MANAGEMENT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STD Drugs</strong></td>
<td>$550,441</td>
</tr>
<tr>
<td><strong>Expendable Medical Supplies</strong></td>
<td>$44,199</td>
</tr>
<tr>
<td><strong>TOTAL COST (US$)</strong></td>
<td><strong>$594,640</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIVERSAL SYPHILIS SCREENING AND TREATMENT OF PREGNANT WOMEN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RPR Syphilis Antigen Tests and Expendable Medical Supplies for Syphilis Screening of Pregnant Women</strong></td>
<td>$128,314</td>
</tr>
<tr>
<td><strong>Drugs and Medical Supplies for treatment of Syphilis in Pregnant Women</strong></td>
<td>$16,110</td>
</tr>
<tr>
<td><strong>TOTAL COST (US$)</strong></td>
<td><strong>$144,424</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PUBLIC SECTOR CONDOM REQUIREMENTS (as of May 2001)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>60 million condoms to be shipped to Tanzania between June 2001 and June 2002</strong></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL COST (US$)</strong></td>
<td><strong>$1,742,250</strong></td>
</tr>
</tbody>
</table>

* HIV Test Kits and Expendable Medical Supplies to support AMREF Project to expand VCT services in selected sites for YEAR 1 only. (Does NOT include VCT in Public Sector).
Appendix F:
Distribution of Commodities and Flow of Information: STD Drugs, Laboratory Reagents and Expendable Medical Supplies.
TANZANIA [January 2001]
DISTRIBUTION OF COMMODITIES AND FLOW OF INFORMATION
STD Drugs, Laboratory Reagents, and Expendable Medical Supplies for STD Control & Prevention:
TANZANIA (as of January 2001)
Appendix G:
List of People Interviewed
Principal Contacts:

USAID/Washington
- Tim Meinke, Technical Advisor to the Common Agenda
- Ken Fujie, US-Japan Joint Collaboration Advisor

USAID/Tanzania
- Robert Cunnane, Health and Population Officer
- Nancy Godfrey, Health Sector Advisor
- Michael Mushi, JSI/DELIVER Activity Manager
- Janis Timberlake, Private Sector NGO Advisor
- Amy Cunningham, University of Michigan, Population Fellow

HealthScope, Tanzania Ltd
- Peter Riwa, HST Associate Director and JSI/DELIVER Consultant
- Justin Nguma, HST Director

Medical Stores Dept (MSD)
- Ben Mkasa, Director, Distribution and Sales

Pharmacy Board
- Dr. Margareth Ndomondo-Sigonda, Registrar

MOH:
- Ms. M. J. Mwaffiši, Permanent Secretary
- Dr. G. Upunda, Chief Medical Officer

Directorate of Preventive Services
- Dr. A. Mzige, Director of Preventive Services

National AIDS Control Program (NACP)
- Dr. R. Swai, Program Manager
- Dr. L. Kikuli, Program Administrator
- Mr. Khalid Hassan, Laboratory Coordinator
- Dr. G. Somi, Epidemiologist
- Dr. M. Nyang’anyi, STD Program Coordinator
- Ms. Mary A. Mshana, Assistant STD Coordinator
- Dr. Stefan Hanson, EU Technical Advisor
- Ms. Z. Msumi, Social Services and Counseling Coordinator

Reproductive and Child Health Section (RCHS)
- Daniel Mmari, Logistics Officer
- Cyprian Mpemba, MIS Officer

EPI Program
- Dr. Eseko, Head of Epidemiology/Disease Control
- Dr. C. Akim, Program Manager

Directorate of Curative Services
- Dr. Z. Berege, Director
- Dr. Joseph Mbatia, Head, Mental Health Services

National TB/Leprosy Program
- Dr. B.F. Njako, Senior Medical Officer
Dr. Rene L’Herminez, MD, Deputy Programme Manager

Pharmaceutical Services
Dr. J. Muhume, Chief Pharmacist and Chairman, Pharmaceutical & Supplies Unit (PSU)
Dr. Kimaro,

Diagnostic Services
Dr. Y. Ipuge, Director
Mr. Vincent Y. Mgaya, Principal Laboratory Technologist
Mr. Mwaiteleke, Principal Equipment Engineer

Directorate of Health and Human Resource Development
Dr. Pemba, Acting Director

Crown Agents
Paul Phillips, Representative Tanzania

Muhimbili University College of Health Sciences (MUCHS)
Dr. Lyamuya, Head, Department of Microbiology/Immunology
Efraim Mbena, Chief Technician, Department of Microbiology/Immunology

African Medical and Research Foundation AMREF
Dr. Daraus Bukenya, Country Director
Dr. Gina Ka-Gina, STD Coordinator
Mr. David Ocheng, Project Officer, Laboratory Services Support Project
Dr. Vera Pieroth, Sexual and Reproductive Health Coordinator
Masumi Mamdani, Adolescent Reproductive and Sexual Health Coordinator

Christian Social Services Commission (CSSC)
Dr. Wim. Flipse, Policy Advocacy Research Advisor

PSI Tanzania
Mr. Deo Ng’wanansabi, Sales Manager

Center for Disease Control (CDC)
Dr. Cheryl Scott, Director
CDC Tanzania AIDS Project

Belgian Technical Cooperation BTC
Georges Aertssen, Resident Representative

Department for International Development DFID
Paul Smithson, Health and Population Adviser
Gertrude Mugizi, Programme Officer

Delegation of the European Commission in Tanzania EU
Dr. Stefan Hanson, EU Technical Advisor
STD/AIDS
German Development Cooperation (KfW)  
Oskar von Maltzan, Director, KfW Dar es Salaam

GTZ  
Dr. Brigitte Jordan-Harder, Technical Advisor

Japanese International Cooperating Agency (JICA/MOH)  
Ms. Kazuko Hashimoto, Health Cooperation Planning Advisor

JOICFP  
Nobuhiro Kadoi, Programme Officer
Japanese Organization for International Cooperation in Family Planning

United Nations Children’s Fund (UNICEF)  
Dr. Aberra Bekele, Project Officer, Nutrition
[Prevention of Mother-to-Child-Transmission]

Joint United Nations Programme on HIV/AIDS (UNAIDS)  
Dr. Hilde Basstanie, Country Programme Advisor

United Nations Population Fund (UNFPA)  
Mr. Teferi Seyoum, Country Representative
Dorothy Usiri, National Program Officer
Christopher Mwajonga, Assistant Representative

World Health Organization (WHO)  
Dr. Mohammed Amri, Disease Prevention and Control Officer
Appendix H: List of References
List of References

John Snow, Inc Documents


Tanzania Ministry of Health/Tanzania-Specific HIV/AIDS References


The United Republic of Tanzania, Ministry of Health, HEALTH STATISTICS ABSTRACT 1999. Vol. 2 Inventory Statistics

The United Republic of Tanzania, Ministry of Health, “Guidelines on Donations of Drugs and Medical Equipment to the Health Sector for Tanzania Mainland,” 1995.


Medical Stores Department, “Essential Drugs and Medical Supplies,” January 2000.

African Medical and Research Foundation proposal to USAID, “Enhanced Same day HIV Counselling and Testing Services Within the Voluntary and Public Sectors in Tanzania,” September 2000.


**Tuberculosis References**


**Pharmaceutical References**


**Tanzania National Drug Policy References**


**Tanzania Demographic Survey References**


General References


AIDSCAP/Family Health International, “Control of Sexually Transmitted Diseases: A Handbook for the Design and Management of Programs (Chapter 7).”


“Guidelines for Logistics, Testing, Monitoring and Quality Control”. Recommendations for Integration of Counselling and Testing Services for STI/HIV/AIDS into District Health Plans and Services in Mainland Tanzania. Written by members of “Think Tank 3” (Ocheng, Mwakagile and Hassan) under the Government of Tanzania and DANIDA Project Agreement. Dar es Salaam. June 1998


