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## FOCUS ON RESULTS

### Uganda



***Effective logistics systems get contraceptives to even small health posts in Uganda.***

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In 2001, the DELIVER project began work in Uganda with the goal of improving its logistics system for essential drugs and contraceptives. Since that time, the scope of work for the Uganda National Expanded Program on Immunization (UNEPI) has greatly increased, establishing effective logistics systems for HIV/AIDS commodities, laboratory supplies, tuberculosis (TB) drugs, malaria drugs and bed nets, and vaccines and related commodities. In addition, DELIVER works to improve warehouse management and distribution; the project also uses technology to support the management of logistics information and the capacity of the Ministry of Health (MOH) to manage health logistics systems.

Beginning in 2003, DELIVER designed and implemented a logistics management and information system to supply HIV/AIDS commodities to accredited MOH sites: nevirapine for preventing mother-to-child transmission (PMTCT), HIV test kits, and antiretroviral (ARV) drugs. The logistics management system for the TB program was redesigned; 3,330 MOH health facility staff in 2,414 facilities were trained to use sound inventory management practices and to order essential drugs and contraceptives in the new integrated system.

During the life of the project, DELIVER has conducted several assessments and related activities, in collaboration with various stakeholders: the MOH, National Medical Stores (NMS), Joint Clinical Research Centre (JCRC), Centers for Disease Control and Prevention (CDC), Uganda Program for Human and Holistic Development (UPHOLD), AIDS/HIV Integrated Model District Programme (AIM), ORC Macro, and MEASURE DHS. Findings from the DELIVER/Uganda assessments are the basis for this report; other assessments supplied important data about fertility trends, family planning use, and HIV/AIDS-related activities. Demographic and Health Survey (DHS) data revealed a decrease in the Uganda total fertility rate—from 7.4 in 1988 to 6.9 in both 1995 and 2000/2001. The contraceptive prevalence rate (CPR) for modern methods dramatically increased during the same time period—from 2.5 percent in 1988 to 18.2 percent in 2000/2001. Indications are that the HIV prevalence rate has stabilized at 6.4 percent; one million people are now living with the virus.



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Overall, DELIVER and the MOH have made substantial progress toward improving supply chain management for many Ugandan health programs. Together, they have designed and implemented new supply chain systems for laboratory supplies, TB drugs, and HIV/AIDS products and have improved existing systems for family planning and essential drugs. At the same time, they are successfully managing these systems for a greatly increased number of products. In fact, since DELIVER began working in Uganda, both product availability and logistics system performance have improved substantially at every level of the system; because of this, access has increased for important drugs to treat opportunistic infections (OI) and sexually transmitted infections (STI) for all clients. By increasing the number and types of products, the MOH and DELIVER, working together, have increased the value of the drugs in the health system five-fold during the last five years. Current and future activities will help consolidate these gains and further strengthen Uganda's health system.

## EXPANDING SERVICES

A significant expansion has taken place in services provided at health care facilities since DELIVER began working in Uganda. The MOH ARV program increased from 26 active treatment sites in June 2004 to 222 active treatment sites by September 2006, with almost 35,000 patients receiving government ARVs. DELIVER assisted the MOH in training the service providers, tracking the drugs, and helping the facilities

gain accreditation for HIV testing and ARV distribution. An additional 50,000 patients are taking ARVs from other sources, making Uganda the only country to have reached their World Health Organization treatment target in the first year of implementation. Results from the 2006 Uganda Health Facilities Survey (HFS) show that all services listed in table 1 were expanded between 2002 and 2006 at both the MOH and nongovernmental organization (NGO) facilities. Treatment for TB and OIs in MOH facilities had the largest increase—29 and 28 percentage points, respectively. NGOs saw a similar increase with their OI services. PMTCT services increased by 300 percent in government facilities; MOH records show they are now available in 400 sites nationwide. Voluntary counseling and testing (VCT) services increased dramatically in the MOH system as well; services are now available in 460 sites across the country. DELIVER continues to support the supply chain for this greatly increased network of service sites.

Immunization services have been greatly expanded during the last five years. With assistance from DELIVER, the UNEPI expanded immunization coverage of pentavalent third dose vaccines from 63 percent in 2001/2002 to 89 percent in 2004/2005. As a result of regular services and a mass measles campaign, laboratory-confirmed monthly measles cases decreased from approximately 70 per month to fewer than five per month. Table 1 outlines a universal increase in the percent of both MOH and NGO health facilities offering HIV/AIDS, OI, STI, and TB services to clients in 2006.

**Table 1. Availability of HIV/AIDS Related Services in Survey Facilities by Authority (Comparison of 2002 and 2006 Surveys)**

Service	MOH Facilities Providing the Service (%)		NGO Facilities Providing the Service (%)	
	2002	2006	2002	2006
Antiretroviral therapy	0	9	0	16
Voluntary counseling and testing	7	27	21	26
Preventing mother-to-child transmission	8	24	5	18
Opportunistic infection	60	88	60	84
Sexually transmitted infection	74	96	84	96
Tuberculosis diagnosis	23	38	32	50
Tuberculosis treatment	40	69	28	33
Laboratory services	—	42	—	67

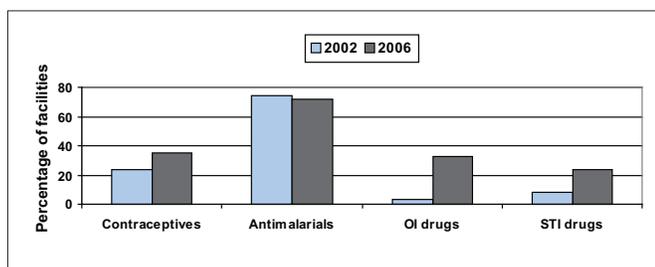
## PRODUCT AVAILABILITY

When DELIVER began work in Uganda the primary objective was to increase the availability of health products and improve the logistics system for contraceptives and essential drugs. This strategic objective has remained in place, although the list of commodities has greatly increased. Results from the 2006 HFS showed an increase in the availability of every product category assessed in health facilities. For example, in 2006, 24 percent of facilities had all four STI drugs available on the day of the visit (ciprofloxacin, benzathine penicillin, doxycycline, and metronidazole), up from only 8 percent in 2002 (see figure 1). A substantial increase was also noted in the percentage of facilities that had all three short-term family planning methods (oral pills, injectables, and condoms) in stock on the day of the visit—from 24 percent in 2002 to 35 percent in 2006. Additionally, specific products, for example, nevirapine for PMTCT, went from being available in just two facilities to being available in 32 facilities on the day of the assessment.

Despite this significant increase in product availability, findings show a long duration of stockouts and low stock levels, which signals weaknesses in the system. Improvements were made in the duration of stockouts between 2002 and 2006 for some of the products—notably, Determine, Depo-Provera, and penicillin. However, other products—RHZE, metronidazole, and cotrimoxazole—were stocked out for longer periods in 2006.

Cotrimoxazole, now dispensed as a prophylactic for OIs in HIV-positive patients, has been incorporated into the national AIDS policy. Large stockouts may have occurred as a result of this policy change, because the necessary adjustments in procurement to address the increase in demand were not made. After the survey was completed, a large shipment of cotrimoxazole arrived in-country

**Figure 1. Availability of Product Category on Day of Visit (Comparison of 2002 and 2006 Health Facilities Survey)**

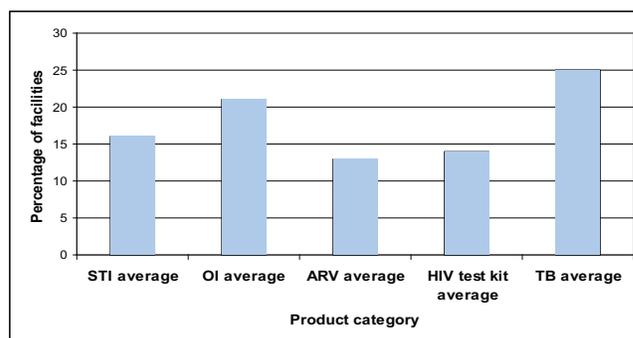


and a large-scale distribution is currently underway, which should end the stockouts for the near future.

Figure 2 shows the average percentage of facilities that had products stocked between the established minimum and maximum (max-min) stock levels for each product category. Overall, fewer than 25 percent of facilities are maintaining adequate stock levels for all product categories. Many of the products that were not adequately stocked, including nevirapine, HIV test kits, and OI and STI drugs, were understocked more often than overstocked.

Commodities that are not stocked between established levels and stockouts of long duration can be indicative of a problem with the logistics system—namely, stockouts at the central level, ineffective delivery system, or the inability of facilities to reorder additional stock and to order at the right time. However, other factors—national level policy decisions, lack of funds, and donor issues also have an important impact on product levels. Condoms were the least available (63 percent) contraceptive assessed during the 2006 HFS, largely due to a policy decision made by the MOH to remove all condoms from facilities and to conduct post-shipment testing of all incoming condoms. This decision caused supply disruptions for 1.5 years. Test kits and ARV procurements have both been disrupted by bureaucratic problems within the government and the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). Despite established max-min level guidelines, a lack of money in the credit line system forces most facilities to order commodities according to available funds rather than

**Figure 2. STI and OI Drugs, ARVs, HIV Test Kits, and TB Drugs: Percentage of Facilities Stocked between Established Minimum and Maximum Stock Levels on Day of Visit (2006 Health Facility Survey)**



their rate of consumption; therefore, facilities cannot maintain adequate stock levels.

## LABORATORY SUPPLIES

The 2002 HFS provided some preliminary information on laboratory logistics and capacity in Uganda. Findings showed that nearly 90 percent of hospitals and Health Center<sup>1</sup> (HC) IV–level facilities reported having the ability to conduct any test related to HIV/AIDS, TB, or STIs, but only one-quarter of HC III–level facilities had the same capacity. If the availability of needed supplies and presence of trained staff are included in this analysis, even fewer facilities are actually able to conduct these tests.

To gather more detailed information on the state of laboratories in the country, in 2004, the MOH, CDC, and DELIVER conducted the first and only comprehensive national laboratory assessment. The survey included inquiries about supervision, staffing, training, logistics, equipment, and testing. About one-half of all staff reported receiving in-service training in the preceding year, and internal quality assurance measures were reportedly used in almost all the laboratories. Because of a lack of reagents, the commodity and logistics findings revealed an inability of many health clinics to provide the basic range of services. Approximately half of the regional hospitals could not perform confirmatory testing on OI tests; 20 to 30 percent of the district hospitals did not have enough reagents for basic STI and OI testing. Inventory management of laboratory commodities was also found to be weak; one-half of the facilities did not use any report forms and only about one-quarter used stock cards.

This survey has been instrumental in providing the information needed to determine future efforts to improve the laboratory logistics system. DELIVER assisted the MOH in redesigning the system, including creating a laboratory credit line, providing training and funding, and procuring needed supplies. Laboratory reagents were recently distributed to more than 900 laboratories

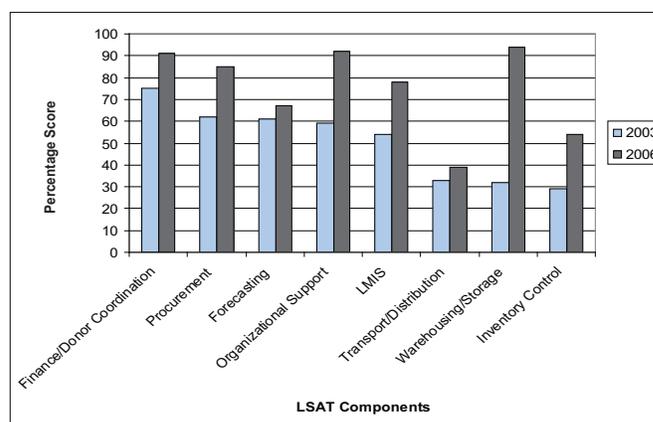
<sup>1</sup> HC II serves a small community and provides outpatient care, antenatal care, immunization, and outreach; HC III serves a sub-county and provides all the HC II services plus inpatient care, maternity services, laboratory services and environmental health; HC IV serves a sub-district and provides all the HC III services plus surgery, blood transfusions, and supervision of lower level facilities.

for the first time under the new credit line system. A separate survey assessed the condition of existing CD4 machines and the need for additional machines. The survey found that, currently, there are 26 CD4 machines in Uganda and another 26 machines are on order.

## LOGISTICS SYSTEM PERFORMANCE

In 2001 and 2003, DELIVER used the Logistics System Assessment Tool (LSAT) to conduct an assessment. The results provided stakeholders with a comprehensive picture of the contraceptive logistics system for diagnostic and work planning and demonstrated continued strength over time in the finance and donor coordination component of the system. It also showed the relative strengths in procurement, forecasting, logistics management information system (LMIS), and organizational support. Weaknesses found during the 2001 LSAT in transport/distribution, warehousing/storage, and inventory control (see figure 3) showed where efforts should be focused to further improve the contraceptive logistics system. According to the 2006 LSAT, significant improvements were made in every component. Warehousing/storage and organizational support made especially strong improvements since 2003, whereas transport/distribution and forecasting remained weak. For example, findings from the 2006 HFS suggest that more than 70 percent of facilities are adhering to all storage guidelines except for having sufficient space available for existing products. In response to a similar problem of insufficient room at the UNEPI warehouse, a dejunking exercise made much-needed space available.

**Figure 3. Logistics System Assessment Tool Component Scores (2003 and 2006)**



Maintaining stockcards is essential for a well-functioning logistics system. From 2002 to 2006, the percentage of facilities with up-to-date stockcards available increased for nearly every product. Essential drugs were the most likely to have stockcards available and updated in both 2002 and 2006. In similar results from 2002, the availability and maintenance of stockcards for HIV test kits, TB drugs, and contraceptives remained relatively low.

The findings above suggest that the maintenance of stock cards depends on where they are stored; if they are stored in the clinic area, they are often managed by service providers, instead of being managed by the in-charge or storekeeper, who has probably been trained in logistics.

## ORDERING

Among MOH facilities, 83 percent stated that they determined order quantity through the NMS credit line; 17 percent reported that a higher-level facility determined their order for them. Fifty-eight percent of respondents reported that ordering and receiving supplies through this system had improved somewhat or a lot; however, only 27 percent of hospitals and approximately 40 percent of the other facilities reported receiving the quantities of essential drugs that they ordered through the NMS, as shown in table 2. This finding suggests that while facilities seem to be satisfied with the new system, there continue to be challenges with rationing at the NMS. The MOH health facilities can order essential drugs and contraceptives every two months, but only one-third of the facilities are doing so. More than half (56 percent) said they ordered every three months; 10 percent said they ordered every month.

**Table 2. Percentage of MOH Facilities Reporting on Quantities Received through the NMS Credit Line**

Facility Type	Do You Receive the Quantities That You Order from the NMS Credit Line?	
	Yes	No
District hospital	27	73
HC IV	39	61
HC III	41	58
HC II	44	57
Total	41	59

## TRAINING

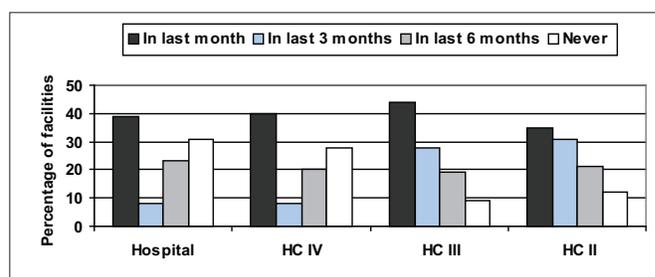
The core objective of improving human capacity in logistics among key stakeholders is part of DELIVER's effort to enhance logistics systems performance. In response to the MOH's aim to establish and improve logistics systems for several different commodities, DELIVER has worked with the MOH since 2001 to train more than 8,600 health personnel in the government and NGOs on the various systems. Another 13 DELIVER, MOH, JCRC, NMS, and pharmacy staff have attended DELIVER's intensive three-week supply chain management course.

The 2006 HFS found that between 80–100 percent of hospitals and HC IVs had trained their staff in logistics management of ARV drugs, HIV tests, nevirapine for PMTCT, laboratory supplies, and TB drugs. About two-thirds of HC III facilities staff were trained in logistics management for the services they offer, whereas HC IIs were much less likely to have trained staff. Approximately 60 percent of all health facilities reported having staff trained in the NMS credit line system. This is surprisingly low given that the national training program was designed to include two staff from each facility from each level of the system, excluding hospitals; this low number may be due to staff transfers between facilities.

## SUPERVISION

Another critical aspect of improving human capacity is to ensure that supervision policies are in place and implemented in a consistent, timely manner. Seventy percent of HC II and HC III facilities reported having received a supervisory visit that included commodity management activities within the last three months (see figure 4). Forty-eight percent of HC IVs and hospitals were also visited within the last three months.

**Figure 4. Most Recent Support Supervisory Visit That Included Drug Management**



## COMMODITY SECURITY

DELIVER's participation in many activities has moved commodity security forward. The project assisted the MOH in preparing a five-year health sector strategic plan and in securing GFATM, Multi Country AIDS Program/World Bank (MAP/WB), and the President's Emergency Plan for AIDS Relief (PEPFAR) funding for various commodities, as well as closing gaps in procurement with emergency funding and orders. Funding for health services and commodities has increased dramatically over the past few years. In 2002, the funds allocated to buy essential drugs and other commodities for the minimum health care package were only U.S.\$0.90 per capita. Since that time, there has been significantly more funding for health activities; this increased the amount per capita for health care-related expenses to U.S.\$4.60.

DELIVER has also assisted the MOH in collecting information on all MOH and donor procurement for the public sector; the data will be standardized and managed centrally to foster more rationalized planning and efficient use of resources. Annual contraceptive procurement table (CPT) exercises have helped reduce stockouts of contraceptives. Logistics has also been formally incorporated into several national program plans, including the national AIDS control program, UNEPI, and laboratory services. The NMS, NTLP, and ARV and laboratory programs have also added logistics personnel to their staff.

To support improved collaboration and information sharing among stakeholders, DELIVER has participated in the Reproductive Health Contraceptive Security (RHCS) Committee, as well as forming strong alliances with many other USAID projects and donors in many different activities. This collaboration has included Making Medical Injections Safer (MMIS), UPHOLD, AIM, AFFORD, UK Department for International Development (DFID), Clinton Foundation, Malaria Consortium, and particularly the MOH and JCRC. This collaboration has elevated the role of logistics and the need for commodity security in achieving overall public health outcomes. DELIVER/Uganda also participated in the East Africa RHCS workshop in 2005, attending with the Uganda delegation. Key representatives from six countries, donors, and manufacturers came together

to discuss and share pressing issues and approaches affecting contraceptive security at both the country and regional levels.

For family planning, these and other efforts have improved commodity security. Uganda's Contraceptive Security Index increased from 39/100 in 2003 to 48/100 in 2006. The supply chain component had the largest increase—from a score of 8.2/20 in 2003 to 14.9/20 in 2006—largely due to improvements in the logistics management information systems as well as other commitments to product availability that included zero tolerance for stockout policy. Uganda's scores for all the components assessed were relatively low, although all of them increased from 2003. Uganda had the 17th lowest aggregated score among the 63 countries assessed in 2006. Both the 2003 and 2006 Contraceptive Security Index showcase where improvements have been made and which components still need strengthening.

A 2003 DELIVER contraceptive market segmentation analysis showed that the poorest 23 percent of women of reproductive age are using only one-quarter of the contraceptives supplied by the public sector. Because funding for public-sector family planning programs is often very limited in resource-constrained settings, these programs are designed to meet the needs of the poorer segments of the population who cannot afford to use the private sector services. Ensuring that Uganda's poorest population has increased use of these services and better access to commodities will be an important component of the country's strategy for achieving contraceptive security.

## CONCLUSION

Since DELIVER's work began in 2001, the project has assisted the MOH in designing and implementing an LMIS to supply accredited MOH sites with nevirapine for PMTCT, HIV test kits, and ARV drugs. The logistics systems for essential drugs and contraceptives, TB drugs, and laboratory supplies have also improved during this time. The MOH has greatly expanded HIV services and the availability of a mix of methods within several product categories have all increased since 2002 (contraceptives, antimalarials, OI drugs, and STI drugs).

While these accomplishments have been significant, for the system to run smoothly, current weaknesses must be attended to. A lack of adequate logistics supervision for all products, ongoing training needs, and episodes of stockouts for most products must be addressed. Other areas of concern include forced rationing of products due to lack of adequate funding, lengthy distribution times to lower-level SDPs, irregular facility orders, and central-level supply disruptions caused by policy decisions and a lack of coordination.

In addition to these weaknesses, the demand and need for more commodities and complex systems will place additional strains on the government and donor communities. The MOH plans to further expand the HIV/AIDS treatment and testing programs, which will present many challenges for various logistics systems and for financial and personnel resources. Other future needs include cross-system product delivery for the integration of TB and HIV supplies, improved commodity procurement and distribution coordination among donors and MOH programs, and new warehousing systems for the NMS as the volume of commodities increases.

To address some of the weaknesses and to ease the burden these new activities may place on the systems, the MOH should consider strategies that include increasing funding for supplies and systems, more efficient and increased supervision practices, ongoing logistics training, and improved collaboration between the MOH, DELIVER, USAID, other government orga-

nizations, and NGOs. The MOH, DELIVER, and other stakeholders have had significant successes in recent years, but without addressing the current weaknesses in the system and future increased demands, these accomplishments may be shortlived.

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### DELIVER

John Snow, Inc.  
1616 North Fort Myer Drive, 11th floor  
Arlington, VA 22209 USA  
Phone: 703-528-7474  
Fax: 703-528-7480  
Email: [deliver\\_pubs@jsi.com](mailto:deliver_pubs@jsi.com)  
[www.deliver.jsi.com](http://www.deliver.jsi.com)