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SOUTH AFRICA: FINAL COUNTRY REPORT



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DELIVER
No Product? No Program. Logistics for Health

SOUTH AFRICA: FINAL COUNTRY REPORT

DELIVER

DELIVER, a six-year worldwide technical assistance support contract, is funded by the U.S. Agency for International Development (USAID).

Implemented by John Snow, Inc. (JSI), (contract no. HRN-C-00-00-00010-00) and subcontractors (Manoff Group, Program for Appropriate Technology in Health [PATH], and Crown Agents Consultancy, Inc.), DELIVER strengthens the supply chains of health and family planning programs in developing countries to ensure the availability of critical health products for customers. DELIVER also provides technical management of USAID's central contraceptive management information system.

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Abstract

The South African National Department of Health (NDOH) asked the U.S. Agency for International Development/Pretoria to provide technical assistance to eliminate condom shortages and stockouts and improve the quality of public-sector condoms. In response, the Technical Assistance Service Contract (TASC) and DELIVER project designed and implemented a logistics management information system that was driven by service delivery site consumption and inventory data, together with a quality assurance program based on international standards and specifications. These interventions resulted in guaranteed high-quality public sector condoms and a stockout rate of less than one percent, sustained over the past five years.

TASC and DELIVER provided added value by also proposing, designing, and implementing a branded public sector condom with radically revised packaging, which has doubled distribution figures. More than one billion condoms have been distributed during the reporting period, averting an estimated one million HIV infections.

Because of these successes, TASC and DELIVER were asked to assist the NDOH in identifying patient information and reporting systems that could strengthen logistics systems and service delivery for the government's antiretroviral rollout program. TASC and DELIVER developed a proof of concept and field tested an innovative patient information and program reporting system based on a proven, South Africa-developed, combination biometrics/smart card technology. The resulting Secure Technology Advancing Treatment (STAT™) system was field tested in both clinic and community outreach settings. This concept has now been integrated into the government's long-term strategic plan for a national electronic patient record.

DELIVER

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ACRONYMS

ABC	abstinence, be faithful, use condoms
ARV	antiretroviral
ART	antiretroviral therapy
CRS	Catholic Relief Services
CSV	comma separated value
DFID	Department for International Development (UK)
FBO	faith-based organization
IEC	information, education, and communication
IT	information technology
LMIS	logistics management information system
NDOH	National Department of Health
NGO	nongovernmental organization
PEPFAR	President's Emergency Plan for AIDS Relief
STI	sexually transmitted infection
SAG	South African Government
SABS	South Africa Bureau of Standards
SACBC	Southern Africa Catholic Bishops Conference
SFH	Society for Family Health
STAT™	Secure Technology Advancing Treatment
STB	State Tender Board
TASC	Technical Assistance Service Contract
TB	tuberculosis
USAID	U. S. Agency for International Development
USG	U.S. Government
WHO	World Health Organization

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Much credit is due to our hardworking, devoted, and capable partners in the National Department of Health, provinces and districts, clinics, and other sites where the essential work of preventing and treating HIV and AIDS is happening. We have been honored to work with you in this vital effort.

EXECUTIVE SUMMARY

South Africa has one of the largest populations in the world living with HIV: 5.5 million people at the end of 2005 (UNAIDS 2006), who represent 11.6 percent of the general population.

In 2000, the National Department of Health (NDOH) of South Africa requested support from the U.S. Agency for International Development (USAID) in addressing two critical weaknesses in the government's prevention program relating to condom procurement and distribution: the poor quality of condoms that were distributed in South Africa and the frequent and prolonged shortages and stockouts in the provinces. Both problems attracted regular negative media reports about the government's human immunodeficiency virus (HIV) prevention program and eroded public confidence in the program, especially in the effectiveness of condoms to prevent HIV transmission. These weaknesses had far-reaching effects, not only by hindering increased condom use, in particular, but also by undermining public interest and conviction in the government's comprehensive abstinence, be faithful, and use condoms (ABC) prevention program.

In response, USAID/Pretoria contracted with John Snow, Inc., under the Technical Assistance Service Contract (TASC), to provide logistics technical assistance to the NDOH's HIV/AIDS & STI Prevention Unit. From the beginning, DELIVER provided critical technical and management support to TASC in South Africa. DELIVER assumed full program responsibility in 2004–2005 when the TASC contract came to an end. This report covers 2000–2006 and includes all activities undertaken by TASC and DELIVER. For ease of reporting, this paper will refer to the implementing agency as TASC and DELIVER.

TASC and DELIVER, co-located within the NDOH, and in close collaboration with national and provincial counterparts, have successfully developed and implemented a package of technical solutions for the two critical shortcomings in condom quality and availability. First, system support has eliminated poor-quality issues by ensuring compliance testing to World Health Organization specifications and standards of all production batches of condoms, regardless of local or overseas manufacture. This guaranteed that only very high-quality public sector condoms are distributed in South Africa. Second, TASC and DELIVER developed a logistics management information system (LMIS) that has enabled the NDOH to eliminate shortages and stockouts in the provinces by establishing and servicing 186 primary distribution sites across all provinces. These two achievements were crucial in empowering the South African government to sustain its HIV prevention focus in its response to the HIV and acquired immunodeficiency syndrome (AIDS) epidemic and to maintain its long-term goal of ensuring that the forty-two million people in South Africa who are currently HIV-negative remain so. Over the life of the project, more than one billion high-quality condoms were distributed; the technical experts from Futures Group, in consultation with the NDOH, have estimated that this distribution has averted more than one million HIV infections.

In 2004, TASC and DELIVER worked closely with the HIV/AIDS & STI Prevention Unit's *Khomanani* (Caring Together) campaign and the national AIDS Consortium Team in designing and launching the government's new *choice*TM public sector condom. In recognition of that successful collaboration, in 2005 the NDOH requested DELIVER's support to develop and implement the long-term abstinence and be faithful components of the government's ABC prevention program. Because it was clear that South Africa had moved beyond a mass media campaign aimed at raising HIV/AIDS awareness, TASC and DELIVER designed a community-based communications effort that directly contributes to behavior change by enabling vulnerable populations to more realistically assess their individual risk of HIV/AIDS and then empower them to choose abstinence and being faithful as the most effective. According to Jim

Heiby, USAID/Washington senior technical advisor for research on FP and STIs, abstinence is the most effective way of preventing HIV; being faithful is the most effective intervention prevention strategy.

While TASC and DELIVER are proud of the achievements made in improved condom logistics and quality, the most challenging logistics work—and the most exciting advances—have occurred in logistics for antiretroviral (ARV) drugs.

In late 2003, as a result of its successful technical assistance to the NDOH in quality assurance and logistics systems for the HIV/AIDS prevention program, TASC and DELIVER were asked by the Chief Director, HIV/AIDS, National department of Health to advise the NDOH on patient information and reporting technologies/systems in use in South Africa that could facilitate the rollout of the government's ARV therapy (ART) program. When the number of doctors in-country and the number trained in ART were considered, it was obvious that the national rollout faced an initial demand (500,000 people requiring immediate treatment) that far outstripped the human capacity to deliver the necessary treatment. Given these constraints, it was clear that innovative service delivery models needed to be developed that could facilitate ongoing patient support (i.e., once patients were stabilized in a hospital or health center setting) through community health workers, who could provide local community and even home-based dispensing. No patient information and commodity tracking system existed that could be successfully implemented in this new service delivery approach.

A responsive information system was needed to adequately address issues of confidentiality; authorization and verification of service providers and patients; patient mobility; and most important, operate in an off-line environment at the community outreach level when necessary.

In developing an appropriate system, TASC and DELIVER partnered with Net1 Applied Technologies, a private-sector South African biometrics/smart card leader that already had a contract with the South African government. The challenge for TASC and DELIVER and Net1 was to adapt existing technology to meet the needs of the ART rollout program. The result was the Secure Technology Advancing Treatment (STAT™), a system that to date has been field tested in a nongovernmental organization (NGO) community outreach setting in Soweto that provides palliative care; a static clinic operated by Catholic Relief Services (CRS) and the Southern Africa Catholic Bishops Conference (SACBC); and a CRS/SACBC mobile ARV community outreach unit that provides ART services to eight remote and underserved communities.

Key indicators for the NDOH and U.S. Government HIV/AIDS programs, and other related data, are batch uploaded every 24 hours and made available to authorized users on a Web-enabled central STAT™ reporting database, which was designed and is managed by DELIVER. This system provides virtual real-time reporting and strategic information capabilities to donors and program managers. Now that the system has been proven to work effectively in a variety of settings, DELIVER has begun developing the system and infrastructure required to roll out the STAT™ system on a scaleable and sustainable basis.

PROGRAM BACKGROUND

In 2000, the U.S. Agency for International Development (USAID)/Pretoria contracted with John Snow, Inc., under the Technical Assistance Service Contract (TASC), to provide logistics management support to the National Department of Health (NDOH). This three-year assistance effort was in response to chronic problems facing the NDOH as it began implementing the prevention component of the Five Year Strategy Plan for South Africa for HIV/AIDS—specifically, poor condom quality and prolonged shortages and stockouts in the provinces. At that time, these problems were attracting constant media attention and were very politically sensitive. It was clear from the beginning of TASC and DELIVER’s involvement that quality assurance was nonexistent; condoms were being distributed in irrational, pre-allocated monthly quantities with no regard for actual documented consumption. Under these circumstances, it was not surprising that many sites had years of stock on hand while others stocked out halfway through the month.

From the beginning, to improve the national condom promotion program for fighting HIV/AIDS, DELIVER provided technical support to TASC by reviewing and refining the procurement, distribution, and monitoring of condom distribution. The condom promotion program required significant assistance in the following areas:

1. systems development for the condom logistics management system, including forecasting, procurement, shipment, warehousing, and distribution
2. monitoring, which requires a logistics management information system (LMIS) that can regularly track distribution and stocks and predict further needs
3. quality assurance, including protocols, guidelines, and testing for condom procurement
4. training in logistic management systems, including curricula and manuals, initially at the national level; and the coordination of eventual cascade training to provincial and district levels.

TASC and DELIVER also assisted the NDOH as they rolled out a national program for female condoms from 29 research sites to 203 NDOH and nongovernmental organization (NGO) sites across the country; they provided technical assistance in quality assurance, LMIS development, logistics management training, and condom distribution. South Africa now has the second-largest female condom program in the world and the program continues to expand.

In June 2003, USAID/Pretoria extended the TASC contract through April 2005. As a result of documented successes in condom logistics, they expanded the scope of work so that TASC and DELIVER could explore possible ways to provide technical assistance to additional programs, especially the antiretroviral therapy (ART) programs.

During this timeframe, TASC and DELIVER continued working with the NDOH in making condom logistics more efficient. Also in 2003, TASC and DELIVER began working closely with the South African Government (SAG) information, education, and communication (IEC) program called *Khomanani* (Caring Together) to design and launch the government’s new *choice*TM public-sector condom. Building on the success of that initiative, the NDOH requested support to develop and implement the long-term abstinence and be faithful components for the government’s abstinence, be faithful, use condoms (ABC) prevention program. It was clear that South Africa had moved beyond a mass media campaign aimed at raising HIV/AIDS awareness; the country needed a communications effort that directly contributes to behavior change by enabling vulnerable populations to more realistically

assess their individual risk of HIV/AIDS and empower them to choose abstinence and being faithful as the most effective prevention strategies.

The other major initiative undertaken in South Africa was the development and testing of an antiretroviral (ARV) drug logistics system that makes use of biometrics/smart card technology for managing ARV drug supplies, maintaining accurate patient information, and monitoring provider-dispensing practices. Beginning in late 2003, the NDOH asked for assistance in designing an effective logistics system for the rollout and scale-up of its new ARV drug therapy program, with an emphasis on ensuring the security and correct dispensing of high-value ARV drugs.

In 2004–2005, the South Africa program transitioned all logistics system technical assistance to the DELIVER contract. DELIVER has focused on continuing to build capacity of the NDOH to manage independently the condom LMIS and all logistics functions related to the HIV-prevention condom program, to increasing HIV/AIDS prevention capacity in IEC at the community level, and to rolling out the new ARV drug logistics system.

COUNTRY CONTEXT

South Africa is a middle-income country and the most developed country in Africa, with an excellent infrastructure, strong economy, stable currency, and functioning democratic government that delivers many essential social services to its people. It has a population of 47.4 million people (July 2006 estimate) and a high literacy rate (86.4 percent). However, 50 percent of South Africans live below the poverty line, and more than 26 percent of the working age population is unemployed.

Compared with other countries in sub-Saharan Africa, South Africa has many favorable health indicators. Per capita government spending on health is U.S.\$258, infant mortality is relatively low (42 per 1,000 live births), use of modern contraceptives among women (ages 15–49) is 55.1 percent, and total fertility rate is 2.2 children per woman. However, South Africa has one of the largest populations in the world living with HIV: 5.5 million people as of the end of 2005 (UNAIDS 2006). This represents 11.6 percent of the general population and includes 3.1 million women and 240,000 children (birth–14). One result is that life expectancy at birth is only 48 years.

In recent years, the Government of South Africa's response to the HIV and AIDS pandemic has been strong. In 2005, the government spent U.S.\$446 million to combat the disease, up from U.S.\$79 million in 2001 (WHO/UNAIDS 2006). Although the government was initially reluctant to support ARV drug treatment, with support from NGOs and faith-based organizations, provincial health departments, and increasingly the NDOH, the number of people receiving ARV drugs increased from fewer than 5,000 at the beginning of 2004 to approximately 190,000 by the end of 2005 (UNAIDS 2006). These efforts have been measurably increased by substantial funding from the President's Emergency Plan for AIDS Relief (PEPFAR). Focused attention by the government on behavior change has resulted in nearly one-half of all males and more than one-third of females more than 15 years of age reporting in 2003 that they had changed their behavior as a result of HIV/AIDS, including being faithful to one partner, reducing the number of sexual partners, abstinence, and condom use (Shisana et al. 2005). A major component of the prevention effort has been the procurement and distribution of condoms as part of a balanced ABC approach.

KEY PLAYERS AND ROLES

DELIVER's major partner has been the NDOH, in particular the Chief Directorate for HIV/AIDS & TB, which is responsible for the national condom distribution program, the Khomanani IEC program, and the national ART rollout.

DELIVER provides the necessary technical assistance in logistics management for the NDOH to expand and improve the condom program, to implement an effective ABC prevention campaign at the

community level, and to establish a secure and effective logistics management system for ARV drugs. The NDOH is also responsible for financing the procurement of all prevention commodities.

In addition, Net1 Applied Technologies, a leader in smart card technology in the banking sector in South Africa and other African countries, was instrumental in helping develop the Secure Technology Advancing Treatment (STAT™) card system through a public/private partnership. Ongoing development of the STAT™ system is being conducted in collaboration with InfoCare, a provider of health information technology solutions, which is ensuring that the system is based on open source technology, to the extent possible, at a cost that is both scaleable and sustainable.

KEY CHALLENGES

A key challenge for TASC and DELIVER has been the development environment. South Africa has had a unique history, and its recent emergence from decades of apartheid, coupled with its natural resource wealth and growth economy, makes South Africa a proud nation that enjoys relative independence from the donor community. As government agencies are well funded, and all public health commodity procurement is government financed, South Africa does not need the usual donor package of activities and goods; rather, the government requests help for specific technical assistance, as was the case with TASC and DELIVER. Given this situation foreign advisors must be capable of melding with this environment, fitting in with the NDOH, and ensuring that all technical assistance is in harmony with NDOH strategic and operational plans.

The already sensitive relationship around U.S. donor support to the newly independent South African democracy has been exacerbated by PEPFAR because of the massive influx of funding; the arbitrary setting of South African targets for prevention, care, and treatment; and the basic differences in philosophy. The U.S. has built a rapid response to what it considers an emergency situation caused by a devastating epidemic; this is in contrast to the SAG, which maintains that HIV and AIDS present a long-term challenge that should be handled in a similar way to other chronic diseases at the primary health care level.

Another key challenge is the attrition of qualified, well-trained, and capable staff from the NDOH, both at the national and provincial levels, as the transition from an upper management dominated by people of European descent under apartheid gives way to the appointment of individuals from historically disadvantaged, but substantially less-experienced and trained, ethnic groups. This transition has left government agencies weakened in terms of management skills and technical expertise—a trend that has been exacerbated because of the recruitment of the best the NDOH has to offer by agencies that are largely funded by PEPFAR.

In condom logistics, the lack of capacity at the national and provincial levels to manage the LMIS and the condom procurement, quality assurance, and distribution system will continue to be a challenge as USAID attempts to withdraw logistics support gradually without causing this massive program to deteriorate.

In the development of the STAT™ system, the use of Net1's proprietary software initially seemed to make sense, given the company's extensive experience in biometric/smart card technology in the banking and social services sectors and the fact that Net1 was the *only game in town* at that time. Unfortunately, Net1's commercial orientation resulted in licensing and data transmission costs that were not cost-effective in terms of a large scale rollout.

It is clear that the Net1 commercial banking cost structure is not tenable in the public health environment. Fortunately, many other technology options are now available. However, the proposed change to a new information technology partner (InfoCare) has delayed national rollout because the underlying technology needed to be transitioned to a less-expensive, open-source solution. This is particularly important because

the system must be able to integrate easily into a variety of clinical management, hospital management, and billing mechanisms that are already in use in public sector and NGO sites.

GOALS AND OBJECTIVES

DELIVER OBJECTIVES

In supporting and building on the efforts of the TASC project, DELIVER has focused on three primary objectives:

1. *Strengthen condom logistics.* Support the NDOH in establishing and managing an effective condom supply chain that accurately forecasts, effectively procures, and reliably delivers quality male and female condoms for the prevention of HIV and AIDS. Technical assistance focused on developing a well-functioning condom supply chain by creating a robust LMIS; developing quality standards for condom procurement and testing; creating a new public-sector condom brand to replace a previous brand that had a reputation for poor quality; expanding access to female condoms; and building the capacity to manage condom supplies effectively at the national, provincial, and facility levels, as well as among NGO and private-sector distributors of *choice*TM condoms.
2. *Support a balanced ABC prevention campaign.* Support the NDOH in introducing a high-quality, branded public-sector condom. Help the NDOH ensure that the government has a balanced ABC prevention program, not only for youth 15 and above and/or sexually active youth, but also for youth aged 14 and younger, focusing on abstinence messages that are appropriate for their ages. Technical assistance initially focused on developing a new brand that distinguished the new condom from its low-quality predecessor and that also fit within the IEC messages of the national abstinence and be faithful campaign. Assistance expanded to adapting IEC messages to local contexts and developing local organizational capacity to conduct IEC activities at the community level.
3. *Develop an ARV logistics system.* Develop, test, and roll out a state-of-the-art system to manage ARV drugs securely, providing individual data that link patient and provider to the particular regimen being provided. Design of the system had to meet the following critical challenges:
 - Ensure that only authorized personnel diagnose, prescribe, dispense, and access patient records.
 - Ensure that only authorized patients or their proxies receive ARVs.
 - Facilitate patient mobility among health care facilities.
 - Track drug consumption against diagnoses and regimens. Prescribed/dispensed drugs must be tracked against a patient's diagnosis and regimen. Does the type and quantity of drugs dispensed match the regimen? Government policy dictates that regimens must be strictly followed, not changed, for example, to an experimental triple therapy.
 - Maintain patient confidentiality.
 - Maintain data transmission security through 128-kilobyte (kB) encryption protocols.
 - Capture data in an offline environment to allow the system to be used in community outreach and home-based care settings even where there is no electricity or connectivity.
 - Allow daily batch uploading of data from service delivery sites to the central database as a cost-effective alternative to expensive online systems.

- Update every 24 hours to provide program managers, funding agencies, and policymakers with virtual real-time data on critical indicators, including patients by stage and regimen, adherence levels, drug consumption, and stock levels.

RELATIONSHIP TO USAID AND CLIENT OBJECTIVES

DELIVER's assistance in establishing an effective system for managing quality condoms has contributed substantially toward meeting the vision outlined in the U.S. Government's (USG's) Five-Year Strategy for South Africa by increasing the capacity of the NDOH staff in procurement, quality assurance, warehousing, and distribution of male and female condoms, and ensuring that condom stockouts at distribution points are eliminated. This activity also assisted in achieving the PEPFAR 2-7-10 goals for prevention by increasing the number of condom service outlets to 186 primary distribution sites and an estimated 2,200 secondary sites.

Ongoing assistance in expanding demand for and access to *choice* condoms in the context of a primary abstinence and fidelity (AB) message supports the Khomanani IEC program. It also contributes to meeting the vision outlined in the USG's Five-Year Strategy for South Africa by working with the NDOH and its partners to implement an effective ABC campaign that focuses on youth and targets underserved rural communities. This activity helps to achieve the PEPFAR 2-7-10 goals by supporting the training of provincial and district-level individuals (including staff of faith-based organizations [FBOs]) to promote HIV/AIDS prevention through abstinence and/or being faithful to reach at least four million individuals.

DELIVER's work in ARV logistics contributes significantly toward meeting the vision outlined in the USG Five-Year Strategy for South Africa by providing a proof of concept, state-of-the-art system to facilitate the virtual real-time collection, analysis, and reporting of the monitoring and evaluation indicators required under PEPFAR and by the NDOH. This activity also contributes to achieving the PEPFAR 2-7-10 treatment goals by potentially helping thousands of people receive their treatments.

DELIVER'S ROLE IN RELATION TO OTHER ORGANIZATIONS

DELIVER worked closely with the NDOH as well as with the Catholic Relief Services (CRS) and other PEPFAR-funded organizations. It also worked collaboratively with other donor stakeholders that included the Department for International Development (DFID) of the UK (particularly the Inter-Sectoral HIV Program), the Swedish International Development Cooperation Agency, and the Belgian government, and with the technical assistance partners they collectively fund. These partners include Family Health International; the Population Council; Management Sciences for Health; Research Triangle (RTI) Institute/JW; the Futures Group; the Program for Appropriate Technologies in Health (PATH); Crown Agents; the Society for Family Health (SFH), a local organization affiliated with Population Services International; and many other local groups, including FBOs.

DESCRIPTION OF STRATEGIES

CONDOM LOGISTICS

DELIVER has focused its condom logistics interventions in four strategic areas: developing systems, implementing an LMIS, ensuring quality, and providing training to build capacity for managing condom supplies.

Systems

The NDOH had very limited capacity to manage the condoms logistics system. As a result, TASC and DELIVER have been largely responsible for procurement, budget tracking, quality assurance, central and regional warehousing, and distribution; they have also provided the strategic information required to

determine the contribution and impact of the national condom distribution program. However, in the last few years, TASC/South Africa and DELIVER began to focus on building capacity within the NDOH to independently manage the condom supply chain, from forecasting and procurement to quality assurance and distribution.

In 2001, with technical assistance from TASC and DELIVER, the NDOH established a central warehouse in Johannesburg with a storage capacity of fifty million condoms. Although this is only a three-month buffer stock, the concept represents an important innovation in terms of improving the NDOH's ability to respond quickly to changing needs in general and enabling it to better manage the transition to new supplier contracts without experiencing shortages or stockouts. Prior to establishing the warehouse, the stock to supply distribution sites was not continuously available at the national level, because suppliers distributed directly to the 186 primary delivery sites.

In addition, the lead time between ordering products and delivery was four to six months. Under these circumstances, shortages and stockouts were common and often exacerbated during national condom awareness campaigns when there was higher than usual consumption of condoms. Although suppliers still delivered most condoms directly to primary delivery sites, the establishment of the warehouse has made the logistics system more agile in responding to changing environments and fluctuating requirements. The warehouse is used to service new sites and to fill gaps where necessary, particularly during periods between contracts.

South Africa is fortunate to have an excellent infrastructure of roads and a highly competitive private-sector transportation industry. TASC and DELIVER leveraged this strength by outsourcing transportation requirements for condoms from the central warehouse to the primary delivery sites by using Rail Total Transport, and later, Elliott International.

DELIVER assisted the NDOH in collaborating with the NDOH-supported, DFID-funded condom social marketing project, implemented by the SFH. DELIVER proposed an innovative concept whereby SFH would distribute public-sector *choice* condoms through the same distribution channels that SFH was using for socially marketed condoms. Interestingly, when this concept was implemented, both social marketing sales and *choice* distribution increased simultaneously—an indication that, contrary to the general view, the two brands were, in fact, not in competition but both could benefit by offering communities an expanded range of products.

To help institutionalize many of the new or improved systems that resulted from technical assistance, DELIVER has updated the HIV/AIDS & STI Prevention Unit's program guidelines, which focus on procurement, quality assurance, warehousing/distribution/tracking, and promotion and use of male and female condoms. These guidelines have been printed and distributed to provincial, district, and health facility levels.

DELIVER has also continued to assist the SAG in procuring quality condoms by collaborating with the State Tender Board (STB) and the recently established Technical Consultant Teams to revise special conditions of tender and condom specifications for new contracts, and to place and adjudicate tenders for male and female condom procurement. DELIVER staff also participated in the technical review of bids and provided input to the STB in awarding contracts.

Logistics Management Information System

At the very start of the assistance program, TASC and DELIVER proposed the development of an LMIS to manage the male condom distribution program. For supply chain management, it was proposed that the system would be paper-based at the primary delivery site level in the provinces and computerized at the NDOH. The LMIS was designed to replace the previous system of allocating stock on a predetermined and static basis with a supply chain that ensured resupply on the basis of documented consumption—i.e.,

a logistics system that is responsive to changing demand while ensuring that stockouts and excessive inventories are avoided.

This concept was approved in September 2000; the LMIS was ready for implementation in April 2001. The impact was immediate. Stockout rates in Western Cape Province, for example, dropped from 36 percent to zero percent, and this zero stockout rate has been sustained. Nationally, stockout rates have remained at only 1 percent at the 186 distribution centers for which the national government is responsible. The elimination of shortages and stockouts has facilitated a dramatic increase in condom distribution, from 198 million condoms in 1999 to 364 million in 2005, representing an 84 percent increase over five years.

This new system has changed how primary delivery sites are serviced by the NDOH. Previously, in the absence of any data on stock levels and consumption, sites were supplied, theoretically, every month (although in practice this rarely occurred because of funding constraints for placing orders and the long lead time between the placing of orders and delivery of product), with estimated quantities determined by the NDOH depending on the type of site. For example, a clinic was assumed to need a relatively small amount, a hospital a larger amount. This type of push system was inefficient and rarely provided the right amount of product for any site. As a result, many sites were inundated with product they did not need, whereas other sites were stocked out after a couple of weeks.

The new LMIS was designed around the simple concept of resupplying using documented consumption. Using monthly documentation of beginning balance, quantity received, amount issued, and ending balance, the computerized LMIS generates a delivery schedule and quantity to prevent primary sites from falling below a three-month minimum stock level and tops the stock level up to a maximum six-month supply.

The LMIS software is based on Clarion, version 5.5G; it has been upgraded to track data related to batch testing (see quality section below). The LMIS is now at the heart of a system that manages the continuous resupply of more than one million condoms per day to 186 primary distribution centers in the provinces and approximately 200 female condom sites.

Quality

Until 2001–2002, South Africa had a history of poor-quality condoms in the public sector, primarily because quality was not regulated and manufacturers were able to deliver poor-quality condoms into the local market without detection. To address this problem, TASC and DELIVER provided technical assistance to the NDOH and the South Africa Bureau of Standards (SABS) in developing and implementing a comprehensive quality assurance program for male condoms as part of an overall effort to strengthen condom procurement. As a result, the NDOH adopted new standards and specifications using World Health Organization (WHO) guidelines for all public-sector condom procurements. Testing protocols were adapted to ensure that manufacturers delivered condoms that met these new standards regardless of whether condoms were manufactured overseas or locally. TASC and DELIVER facilitated additional technical assistance to the SABS by arranging exchange visits between the SABS and the Family Health International condom-testing laboratory in North Carolina.

In addition to systems strengthening of independent, third-party compliance testing, by making technical assessment visits to all condom manufacturers in South Africa and Asia, TASC and DELIVER improved the in-house, factory-level of condoms being offered to the NDOH for purchase. These visits were made in partnership with NDOH counterparts, and resulted in a dramatic improvement in the quality of condoms being tested at the SABS. Prior to these visits, the failure rate of condoms being offered to the NDOH for purchase was 18 percent. Over the subsequent two contracts, this figure dropped to six percent and then to two percent. For the current contract, which began in October 2005, the failure rate has been zero. The LMIS batch tracking system ensures that noncompliant products do not enter the South African market.

However, despite these quality improvements in the initial years, public perceptions have been difficult to change. Even though public-sector condoms meet much higher quality standards than those in the commercial sector, there remained a distrust of public-sector condoms among consumers. Therefore, TASC and DELIVER have worked with the NDOH to propose and introduce *choice*, the new brand of public-sector condoms, and to improve public and policymaker access to information on condom quality, effectiveness, and distribution.

TASC and DELIVER, by providing technical assistance in quality assurance, have been instrumental in assisting the NDOH to roll out a national program for female condoms from 29 research sites to 203 NDOH and NGO sites across the country; and to assist in LMIS development, logistics management training, and condom distribution. South Africa now has the second-largest female condom program in the world and it continues to expand.

Quality assurance standards have now been implemented for both male and female condoms; they include 100 percent production batch testing for male condoms at testing laboratories—approved by the South African National Accreditation System—at the South Africa Bureau of Standards. In-house quality assurance testing for female condoms is monitored to ensure NDOH receipt of compliance certificates prior to shipment to South Africa. As the manufacturing process for polyurethane female condoms is completely different from male latex condom manufacture, and the polyurethane material is extremely strong (South Africa has never experienced even anecdotal evidence of a single breakage in use), in-house factory-level compliance testing was accepted by the NDOH as adequate in terms of quality assurance. NDOH made this decision following a technical assessment visit to the manufacturer, the Female Health Company in London, England, sponsored by TASC and DELIVER—a visit that included NDOH counterpart participation. Independent third-party compliance testing is not considered necessary for female condoms.

Training

Logistics training, including use of the LMIS, has reached 2,875 participants from government, NGO, and even private-sector sites that distribute public-sector condoms, including both male and female condoms. In addition to the supply personnel and the providers who handle the actual dispensing to clients, national program managers and provincial HIV/AIDS coordinators have also received training in the use of the LMIS. National staff have also been trained to use LMIS data to forecast needs accurately and plan procurement efficiently, thereby reducing the likelihood of stockouts due to higher than expected consumption or delayed procurement.

Prior to implementing the LMIS in April 2001, a two-day LMIS training was held for 169 staff from the existing 162 male condom distribution sites, as well as provincial HIV/AIDS coordinators. The intent was to train these key staff in the use of critical LMIS components and also to enable them to train others and to design a rollout of training in their respective provinces. This was important. Because of decentralization, the NDOH cannot mandate how this should be done or even what sites should be included; these decisions are, instead, the prerogative of the provincial departments of health.

Day one of the visit focused on dissipating the common misperception that public-sector condoms are of inferior quality compared to socially marketed or commercially available condoms—a significant and chronic problem among service providers and clients. In the morning, participants were taken on a tour of the Latex Surgical Products condom factory in Johannesburg (the only condom manufacturer in Africa at that time) to see first-hand how complex the manufacturing process is and to understand the importance of factory-level testing processes and procedures. In the afternoon, participants visited the SABS to see condom compliance testing in action and to understand why the NDOH requires this additional testing level before any batch of public-sector condoms can be released for distribution in South Africa. This hands-on experience empowered participants to return to their provinces to speak authoritatively about the high quality of public-sector condoms.

Day two began with a brief discussion about logistics and key logistics terms and concepts before focusing on how to complete the bin card and monthly report elements of the LMIS at the primary distribution site level. Participants also learned how to train others to complete these elements. The final session enabled the provincial teams to develop a workplan on how they would implement the LMIS at their primary delivery sites.

Recent efforts to build NDOH capacity to manage condom logistics have focused on ensuring adequate staffing, at the appropriate levels within the HIV/AIDS & STI Prevention Unit, and on documentation and distribution of logistics manuals. TASC and DELIVER were instrumental in establishing this new unit within the Chief Directorate for HIV/AIDS & TB. DELIVER has worked with the NDOH human resources department to establish new posts at the appropriate levels and on requiring the right combination of technical and managerial skills to handle contract management, quality assurance, warehousing, distribution, and tracking for more than one million condoms per day. The LMIS training manual was finalized and produced for provinces to assist in integrated, district-level cascading training efforts. An LMIS operator manual was drafted and printed to assist in the transfer of technical skills to newly recruited NDOH staff. Also, a comprehensive technical specifications manual for the computerized LMIS was produced for use by information technology (IT) programmers in developing further enhancements to the LMIS.

SUPPORT FOR BALANCED ABC PREVENTION CAMPAIGNS

TASC and DELIVER worked collaboratively with the Khomanani campaign to launch a new public-sector condom and to expand IEC efforts at the community level. Initial work on the new public-sector condom was linked to the quality improvement activities already described. In addition, TASC and DELIVER worked with the AIDS Communication Team in the NDOH, which manages the Khomanani campaign, to develop a trademarked brand and to develop a marketing strategy that was closely linked to key Khomanani strategies and messaging.

On June 16, 2004, National Youth Day, the Minister of Health officially launched the *choice* brand public-sector condom to begin a concentrated marketing and advertising campaign promoting the new product as a high-quality consumer item that is highly effective against unplanned pregnancy and sexually transmitted infections, including HIV. The Minister strongly emphasized the need for abstinence and faithfulness and carefully positioned correct and consistent condom use only for those for whom abstinence and faithfulness are not viable options. The event was televised and attracted both local and international media attention.

All subsequent IEC technical assistance was intended to move beyond HIV/AIDS awareness by focusing on specific perceptions that hamper effective behavior change to reduce risk. Reducing risky behavior begins with increasing an individual's ability to recognize and assess individual risk. For example, in South Africa, a common perception is that if a couple has had a sexual relationship for three to four weeks without any HIV-related problems developing, then the relationship is safe; each partner can trust the other and, therefore, HIV is not a risk. DELIVER worked with the government's Khomanani team to identify these common misperceptions about risk as a way to understand the barriers to behavior change. This process helped in developing messages that focused on realistic risk assessment and encouraged behavior change options—abstinence and faithfulness—which are the best ways to reduce the risk of HIV/AIDS.

ARV DRUG LOGISTICS AND PATIENT INFORMATION

In late 2003, TASC and DELIVER were asked by the Chief Director of HIV/AIDS & TB to research local (South African) information technology solutions in the private sector that could be used to assist in the rollout of ARV drugs from a logistics perspective. It was understood that drug security would present a major challenge. Their review showed that biometric fingerprinting, combined with smart card technology that does not rely on online data transmission but does rely on batch uploading of data every

24 hours, would provide a logistics solution that provides drug security, from manufacturer to patient, but can also provide program managers with an essential link between drugs procured and drugs dispensed to patients.

It was obvious that a successful rollout of ARV drugs for ART, which was initiated in 2003, would significantly depend in the long term on community outreach and home-based care—suggesting that an appropriate system would have to include the capability of operating where without electricity or connectivity.

In response, TASC and DELIVER information technology advisors developed a proof of concept to apply an existing technology to the ART environment for both a static and a mobile outreach setting; it used a combination of biometrics and smart cards already in use in South Africa to disburse approximately five million social grants and pensions.

During this conceptualization process, TASC and DELIVER began collaborating with CRS; they needed assistance in developing an information system that would enable them to adequately monitor their ART rollout program and continuously generate mandatory PEPFAR and NDOH indicators.

A great deal of consensus building was required that involved a wide variety of stakeholders, including USG partners in Pretoria (USAID, U.S. Embassy, and the Centers for Disease Control and Prevention), staff from the USAID/Washington Global Health office, CRS, the NDOH, the South African Medical Research Council, and the Foundation for Professional Development.

The result was the STAT™ system, a biometrics/smart card patient information and reporting solution, which was developed in partnership with Net1 Applied Technologies, a South African company that is a leader in smart card technology in the banking sector. Net1 provided the cards, card readers, registration software, and data transmission infrastructure for the system. TASC and DELIVER developed the secure central reporting database that collects program and logistics data but encrypts patient information to ensure confidentiality.

Beginning in 2004, the system was initially tested at four ARV treatment sites associated with the Catholic Relief Services/South African Catholic Bishops Conference. Until the implementation of STAT™, these sites had relied on rudimentary and paper-based patient information systems, with no electronic reporting capability in place.

Under DELIVER, the focus has been to enhance the functionality and effectiveness of the STAT™ system by facilitating the integration of STAT™ into clinical management, hospital systems, and billing processes that are already in use in government service delivery sites. A variety of these systems are in use in public hospitals; private companies provided the systems: MEDICOM, MEDITECH, and InfoCare; and NGO-affiliated systems such as Therapy Edge and Careware.

DELIVER recognized that any new IT system can potentially be viewed as threatening to existing systems. The rollout approach stressed that the STAT™ system was an additive solution to overall needs and would not duplicate existing efforts. Potential rollout sites were assured that the STAT™ system was not conceived or designed as a stand alone, total solution for all health care settings, but the system could be easily integrated into existing electronic systems. In recognizing how critical eventual integration is, STAT™ was programmed in comma separated values (CSVs) format to facilitate migration and integration of data to and from multiple platforms.

SUMMARY OF DELIVER FUNDING AND STAFFING

USAID provided PEPFAR funding for DELIVER activities under the 2005 and 2006 Country Operation Plans. Total funding was \$3.568 million. DELIVER currently has a Chief of Party in addition to four technical staff, five finance and administrative support staff, and three general support staff.

PROGRAM RESULTS

ELEMENT I: IMPROVED LOGISTICS SYSTEM

Logistics system improvements in South Africa were largely the result of TASC activities that were supported with DELIVER's technical assistance. These improvements have focused on the condom distribution program and the STAT™ system for managing supplies and monitoring dispensing practices for ARV drugs. In this section, we focus on the condom distribution system and will discuss the STAT™ card under Element IV.

Beginning in 2000, when TASC and DELIVER began providing logistics technical assistance, condom stockouts have plummeted to only one percent nationwide at the 186 male condom primary distribution sites and 203 female condom sites that receive public-sector condoms. In addition to public distribution sites, NGOs and private-sector companies are now part of the national logistics system, which is managed through an automated LMIS, which was updated from paper-based monthly reports submitted from primary distribution sites.

Public confidence in government-provided condoms has improved with the introduction and marketing of the high-quality *choice* male condom. Some 364 million *choice* condoms were procured and distributed in 2005, nearly double the number distributed in 2000. Access to these condoms, as well as to female condoms, has expanded at the community level, especially through nontraditional outlets (e.g., railway stations, airports, and shopping complexes). Access to female condoms, in particular, has expanded from 29 research sites to more than 200 public and NGO sites.

Quality assurance is now a standard component of the condom procurement and distribution system, with WHO standards and specifications adopted and applied by the SABS and batch testing conducted regularly. Batch testing results are entered into the LMIS and tracked to ensure that no failed batch makes it into the supply chain.

A central warehouse was established, initially to prevent supply disruption, especially between procurement contracts. Supply disruption has now been gradually eliminated because TASC and DELIVER proposed and implemented a new condition of tender that requires suppliers (currently seven) to each maintain a minimum two-month buffer stock throughout the life of the contract.

ELEMENT II: IMPROVED HUMAN CAPACITY IN LOGISTICS

More than 2,800 individuals have been trained in logistics functions, including national and provincial program managers, warehouse and supply staff, and providers, as well as staff from NGOs and private companies that distribute public-sector condoms. This effort has directly contributed to a near-zero stockout rate nationwide. Recently, to manage the condom logistics system independently, including forecasting, procurement, and distribution, DELIVER has focused heavily on building capacity within the NDOH structure, from the central level down to facilities.

Results include the following:

- Assisted the NDOH human resources department to establish, recruit, and train staff for four NDOH posts within the HIV/AIDS & STI Prevention Unit and to capacitate the unit to handle the contract management, quality assurance, warehousing, distribution, and tracking for more than one million condoms per day.

- Produced an LMIS training manual and related materials for distribution to the provinces to assist in integrated, district-level cascading training efforts.
- Produced an LMIS operator manual to assist in the transfer of technical skills to newly recruited NDOH staff.
- Produced a comprehensive technical specifications manual for the LMIS to be used by IT programmers in developing further enhancements to the LMIS over time.

ELEMENT III: IMPROVED RESOURCE MOBILIZATION FOR COMMODITY SECURITY

In South Africa, DELIVER has been focused only on HIV and AIDS commodities, primarily condoms for prevention. Commodity financing for both the government’s HIV and AIDS prevention and treatment, and care and support portfolios, is provided through tax revenues. Funding is adequate, and the prognosis is good for the short and medium terms. Government resources for condom procurement are adequate to meet projected needs, placing South Africa in a fortunate and unique position within the sub-Saharan region. In terms of the national rollout plan for ART, the government approved 3.9 billion rand (approximately U.S.\$620 million) for fiscal years 2005–2007, the bulk of which goes toward ARV drug procurement. Whether this funding level is adequate is still uncertain; however, it is anticipated to be sufficient, and political commitment is such that it is likely to be increased if necessary.

ELEMENT IV: IMPROVED ADOPTION OF ADVANCES IN LOGISTICS

The condom LMIS is fully automated at the central level. However, it is in the area of ARV drug logistics where the greatest advances in logistics technology have been achieved.

Developed under TASC and field tested under DELIVER, the STAT™ system is a pioneering approach to managing ARV drugs while eliminating theft or diversion of these expensive commodities in the supply chain, particularly at the service delivery site. It involves the adaptation of innovative smart card and biometric technology, which is available in banking and other private-sector businesses, and applying it to a public health setting.

The key feature of the STAT™ system is the use of smart cards; they are the size of a credit card and have memory chips that store up to 64 kB of information for health care workers and 32 kB for patient cards. The data are accessed by a variety of card readers like the one pictured below. Both provider and patient have smart cards that store their information. When these cards are inserted into a card reader, personal identification is confirmed by the scan of a fingerprint. Card readers, such as the one pictured, are battery operated and have a small LCD (liquid crystal display) screen and a built-in printer for readouts, as well as a keypad for numerical input. The patient’s card stores their identity, diagnostics, laboratory results, and prescription information. Both the provider and patient cards are inserted into the reader during a patient’s visit, and information about the encounter with the patient is stored on both the patient and provider cards. The accumulated data concerning patient encounters are uploaded from the provider’s card to a central database at the end of the day using a computer link at the provider’s



Battery-operated card reader with numeric keypad

home base. This can be done through dial-up or broadband connection.

In the picture on the right, a provider has inserted both smart cards into the card reader, and is in the process of verifying the patient's identity through a fingerprint scanner. Also pictured in the background is the home base computer with two smart card readers (located just to the right of the monitor).



Fingerprint scanning to confirm patient identity

This system has numerous advantages for ART:

- Positive and reliable identification of patients is enabled using a fingerprint scan.
- Confidentiality is assured through the fingerprint scan.
- The patient's smart card contains their vital information so a patient can receive treatment at any facility with smart card equipment.
- The provider's card stores information on the patient encounters for the day.
- Patient encounter data can be uploaded at the end of the day to a central database, eliminating the need for a continuous online link.
- Card readers are powered by rechargeable batteries and can be used by home visiting programs.

The central reporting database program and data storage and retrieval systems were completed in early 2005. Data uplinks to the central database went live in April 2005; by late 2005, the system was ready for large-scale implementation. However, the Net1 costing model, which was based on its banking model, proved to be too costly for nationwide scale-up in the public health environment. The licensing agreement for use of Net1's proprietary network infrastructure required an annual per-site licensing fee of 10,000 rand (about U.S.\$1,450), and the projected number of sites, including those served by mobile clinics using the same equipment, were too numerous to make the licensing arrangement cost effective.

LESSONS LEARNED AND FUTURE DIRECTIONS

LESSONS LEARNED

CONDOM LOGISTICS

- *Quality assurance is the most important component of the condom procurement process.* During the course of the TASC and DELIVER project, the NDOH progressed from being a victim of targeting with poor quality condoms to procuring and distributing the highest quality condoms in the country. TASC and DELIVER's technical assistance in this area was crucial to achieving this dramatic shift. The NDOH and the STB learned from experience that the lowest price may not be the most important criterion for accepting a bid. Several of the lowest priced bidders were unable to deliver at all because their condoms failed when third-party independent compliance-testing requirements were initiated. The overriding standard changed from the lowest price to internationally competitive price with guaranteed good quality, which was generated over time through the development of long-term working relationships and the establishment of factory-level track records.
- *An LMIS must address specific program needs and ensure government ownership and sustainability.* Each country's LMIS needs are different, and South Africa is no exception. Indeed, the South African condom program model may be unique in that procurement resources are fully funded by the government and condoms are distributed to 186 primary distribution sites in the provinces, including NDOH, NGO, local government, and private-sector sites.

The LMIS solution that TASC and DELIVER proposed incorporated universally accepted good logistics practices for distribution, determined by documented need, the first-to-expire, first-out (FEFO) standard, and physical counts. But, at the same time, it was tailored to the specific requirements of the program. TASC and DELIVER ensured a buy-in by NDOH even in the conceptual framework phase by presenting to the Director General and obtaining his concurrence in September 2000.

TASC and DELIVER's strategy of incorporating local input in the design and testing phases enhanced the level of buy-in because this product was viewed as a African solution to an African problem. Early buy-in from the IT department of the NDOH ensured in-house sustainability for maintenance and further development.

The national LMIS training prior to implementation was critical in developing consensus and buy-in at the provincial and district levels and made for smooth implementation.

- *Positioning the project within the NDOH and maintaining a low project/USAID profile enhances cooperation.* Although the administrative, financial, and management structures and mechanisms between TASC and DELIVER and the NDOH differ greatly, it was possible to have project staff work collaboratively and productively with government counterparts.

The key is, to the extent possible, not to differentiate between project and government staff and for the TASC and DELIVER team to instill a work ethic and commitment to always go the extra mile to create a success. It is important that government counterparts know that TASC and DELIVER are there to support the NDOH in the long term. TASC and DELIVER always allow the NDOH to take the maximum amount of credit for successes supported by the project.

- *The most effective approach is to solve one problem at a time.* Four principles have guided the TASC and DELIVER project in South Africa: addressing a discrete and doable task, implementing an intervention, documenting that the intervention makes a difference, and only moving on to the next task when the first intervention is sustainable. The logistics management problems within the NDOH and the provincial departments of health are numerous and complex and cannot be effectively addressed simultaneously. TASC and DELIVER's strategy of addressing one key problem at a time before moving on to the next issue has worked well in achieving significant improvements and in building the NDOH's confidence in the projects' abilities and long-term commitment to supporting the government's HIV/AIDS program.
- *Redesigned branding has a powerful effect on changing public perception.* The development of the *choice* brand and the redesign of the packaging has had a very dramatic and positive effect on the demand for government condoms and the public perception of their quality. Perception around quality clearly has a significant impact on consumption. This is highlighted by the fact that the specification of the condom itself was not changed—only the way the condom was packaged.

The branding and packaging redesign in the South African program can serve as a model to other countries in the region. South Africa is unique in that its department of health has a sufficient budget from its national treasury to procure as many condoms as needed, and it does not need to rely on any donated product. However, even in countries that are 100 percent reliant on donated condoms, the host governments can design their own branded condom and request all donors to procure according to the standardized government branding and packaging.

ARV DRUG LOGISTICS

During the initial field test of the STAT™ card, one early lesson, which became apparent almost immediately, was that the existing systems of patient records, filing systems, and basic database technology were very rudimentary at the clinic level. It was necessary to provide a substantial amount of IT support to most clinic and hospital sites in preparation for or in addition to the STAT™ technology (card readers and computer software).

Another key lesson learned was the importance of using open source rather than proprietary software and data transmission infrastructure when developing new IT solutions for noncommercial purposes, such as public health programs. The expense of license fees for proprietary technology can be prohibitive in resource-constrained countries or programs. A related consideration is the need to ensure that adequate funds are available annually to provide IT support for software maintenance and upgrades; this is particularly necessary in open source systems that do not have dedicated commercial support available in the marketplace.

Regardless of whether a system is open source or proprietary, any new software package intended for use in sites that have existing IT systems must be easily integrated and compatible with diverse management information systems and accounting systems. Data should be in CSV format to facilitate migration and integration of data to and from multiple platforms.

FUTURE CHALLENGES

FEMALE CONDOM PROGRAM

- *Capacity building within the NDOH and provincial health offices to take responsibility for distributing more than a million condoms per day.* TASC and DELIVER have intensified efforts to capacitate the NDOH and the provinces to take over responsibility for the procurement, compliance testing, contract management, shipping, warehousing, distribution, and tracking of this massive program. However, this will continue to be a challenge because of the chronically high attrition rates of NDOH staff.

- *Addressing the shortcomings of the NDOH “cascading” training model.* Only one national-level LMIS training was carried out during the lifetime of the project; it took place immediately before LMIS implementation. As expected, the attrition rate of trained staff because of the high turnover in the field has caused the provinces to request additional refresher LMIS training from the TASC and DELIVER team within the NDOH.

Over time, the NDOH has become less and less amenable to responding to provincial requests for support. The NDOH perspective is that the provinces have already been trained and they should carry out further training on their own. This is based in the philosophy of cascading training skills; in other words, the national team trains the provinces who in turn train the districts. The downside of this training model is that the caliber of trainer and the quality of curriculum delivery is diluted at each step.

The cascading model needs to be assessed within the overall context of the national office’s future role compared with the provinces. As the national office leans more toward policy and program guidelines, and less on technical support to the provinces, this issue is likely to become more important.

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APPENDIX 1

PROGRAM RESULTS

Objectives/Strategies	Results	Contribution to DELIVER's Elements	Remarks
Improve quality of public-sector condoms.	Established compliance testing laboratory to international standards; provided international technical assistance.	Element I: Improved Logistics System	Quality assurance is now a standard component of the condom procurement and distribution system, with WHO standards and specifications adopted and applied.
	Implemented 100 percent batch testing to international standards and specifications (approximately 1,300 batches per year).		
	Eliminated historical negative media coverage of condom program and NDOH relating to poor quality.		
Use high-quality logistics information to improve logistics management systems. Eliminate chronic shortages and stockouts.	Designed and implemented national LMIS for male and female condom programs.	Elements I & II: Improved Logistics System, Improved Human Capacity	Gave assistance to capacitate the HIV/AIDS & STI Prevention Unit to handle the contract management, quality assurance, warehousing, distribution, and tracking of condoms. Developed integrated, district-level cascading training using the training material.
	Stockout rates reduced to 1 percent at primary distribution sites for which the NDOH is responsible.		
	Trained 2,800 people in use of LMIS.		
	Developed LMIS user manual and technical documentation.		
Improve availability of and access to public-sector condoms.	Proposed and implemented branding of the public-sector condom and radical redesign of packaging to improve public perceptions of quality of the product.	Element III: Improved Adoption of Advances in Logistics	Adapted new branded condom and IEC messages for local contexts. Developed organizational capacity to conduct IEC activities at the community level. Expanded access to female condoms.
	Distribution of male condoms doubled to more than 1 million condoms per day post-launch of new product.		

	<p>Worked with NDOH and provincial counterparts to increase female condom sites from 27 to 203.</p> <p>Worked with NDOH, local NGOs, and private sector to expand the number of nontraditional outlets for condom distribution.</p>	Element II: Improved Human Capacity	
Ensure balanced ABC messaging in national HIV prevention campaigns.	Collaborated with NDOH Khomanani campaign to ensure a balanced ABC messaging to communities in South Africa.	Element III: Improved Adoption of Advances in Logistics	
Explore feasibility of using biometrics and smart card technologies for an ART patient information and reporting system.	<p>Successfully established a proof of concept through a public/private partnership with a South African smart card technology leader.</p> <p>Successfully completed field testing of biometrics/smart card system for ART in collaboration with Catholic Relief Services.</p>	Element III: Improved Adoption of Advances in Logistics	<p>Involved with the adaptation of innovative smart card and biometric technology that is available in banking and other private-sector businesses; applied it to a public health setting.</p> <p>The STAT™ system is a pioneering approach to managing ARV drugs and eliminating theft or diversion of commodities.</p>

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