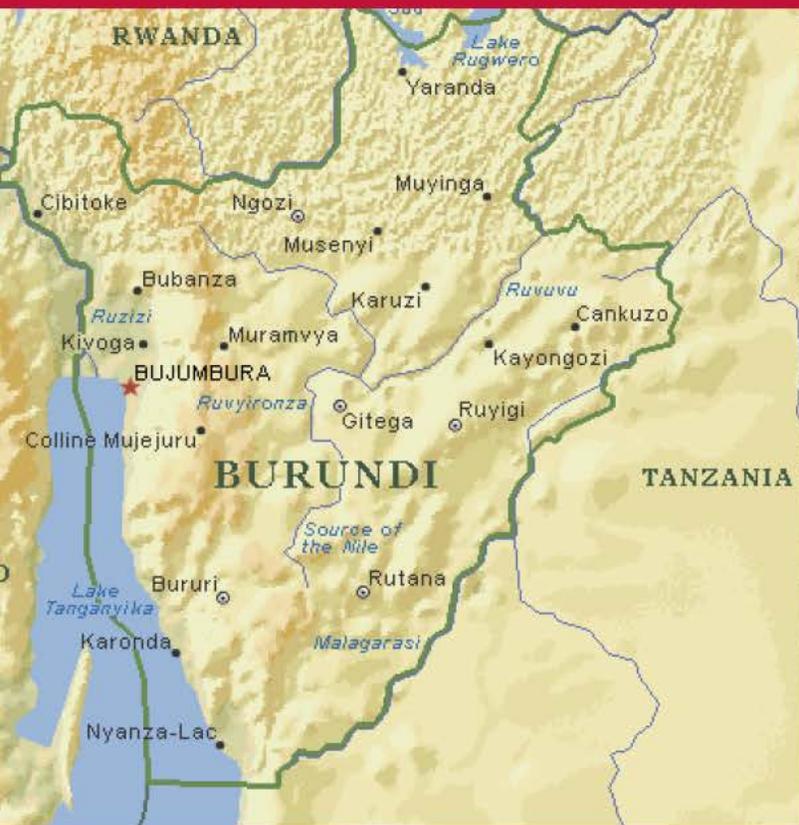




Burundi: Assessment of Routine Long-Lasting Insecticide-Treated Bed Net Distribution



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PRESIDENT'S MALARIA INITIATIVE



Burundi: Assessment of Routine Long-Lasting Insecticide-Treated Bed Net Distribution

USAID | DELIVER PROJECT, Task Order 7

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Abstract

In March and April 2012, the USAID | DELIVER PROJECT conducted an assessment of USAID-supported routine LLIN distribution in Burundi. The assessment examined the project's distribution systems and structures, and reviewed LLIN commodity needs for the national routine LLIN distribution program. This report outlines key recommendations to improve the functioning of the project's activities, as well as steps to improve coordination and LLIN commodity security for Burundi nationally.

Cover photo: Map of Burundi (left); a long-lasting insecticide-treated net hanging in a home (right).

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Acronyms

ANC	antenatal care
BCC	behavior change communication
EPI	Expanded Programme on Immunization
GAVI Alliance (formerly the Global Alliance for Vaccines and Immunisation)	
JSI	John Snow, Inc.
LLIN	long-lasting insecticide-treated bed net
MOH	Ministry of Health
NMCP	National Malaria Control Program
PBF	performance-based financing
PMI	President's Malaria Initiative
PNILP	National Program to Fight against Malaria
PSI	Population Services International
RBM	Roll Back Malaria
TA	technical assistance
TOM	Task Order Malaria (USAID DELIVER PROJECT)
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development

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Executive Summary

In 2009, USAID expanded its malaria control program in sub-Saharan Africa to Burundi through the USAID | DELIVER PROJECT, Task Order Malaria (TOM), Indefinite Quantity Contract (IQC); which is implemented by John Snow, Inc. (JSI), and its partners, including Population Services International (PSI). The overall objective for TOM in Burundi is to rapidly scale up and support malaria control efforts in the country and to complement the Government of Burundi's interventions to ensure that investments are aligned and that the Roll Back Malaria (RBM) and Millennium Development Goals can be achieved.

The scale up of long-lasting insecticide-treated bed net (LLIN) distribution is a key component of Burundi's overall malaria control and prevention strategy. LLINs have been distributed through mass distribution campaigns, routine distribution, and social marketing.

PSI is leading the TO Malaria activities in Burundi. Over the last two years, they have supported the routine distribution of LLINs through **antenatal care (ANC)** and the **Expanded Programme on Immunization (EPI)** clinics.

The USAID | DELIVER PROJECT conducted an assessment of the USAID-supported routine LLIN distribution in Burundi to review the quality of programming and to assess concerns about the potential leakage of LLINs. The field work was conducted from March 26 to April 13, 2012.

The objectives of the assessment were to verify the quality of the USAID-funded routine LLIN distribution and controls. As part of the field work, the staff—

- compared the performance of LLIN tracking pilot districts versus control districts
- determined the severity of current and/or potential stockouts
- highlighted risks for LLIN leakage within the routine distribution system
- identified concrete steps to improve the USAID-funded LLIN distribution.

JSI staff from the USAID | DELIVER PROJECT visited Burundi to conduct a phased review of PSI/Burundi's President's Malaria Initiative (PMI) activities, which the USAID | DELIVER PROJECT funded from March 26 to April 13, 2012.

The first part of the research was a desk review of LLIN delivery notes from 2011, followed by site visits to establish the accuracy of the information in the delivery notes and distribution reports. This part of the review focused on confirming the receipt of PMI-procured LLINs, as well as examining whether the distribution plan established by PSI/Burundi, in collaboration with the National Malaria Control Program (PNILP), had been correctly followed. The technical assistance (TA) identified potential areas where the distribution system could be improved.

The next phase included site visits to seven districts, both rural and urban, to examine the LLIN distribution system on the ground.

Finally, the results suggested areas to improve the quality of PSI/Burundi's malaria control programming under this contract. The review identifies key technical and managerial areas to be strengthened for the national LLIN distribution program and for the USAID-funded LLIN distribution program.

The assessment revealed that 100 percent of the 415,000 LLINs procured under the project had reached the district level and that 94 percent had reached the facility level. The assessment also revealed that, while the overall availability of the data is good, improvements need to be made in recordkeeping and stockkeeping practices. In addition, the assessment revealed that some districts are managing different LLIN distribution systems for different LLIN donors, within the same district. Supervision, currently only in some areas, should be expanded nationally.

Furthermore, it became clear that LLINs had not been uniformly allocated across districts, leading to shortages in some districts, but other districts with significant stock.

The assessment recommendations fall into two key areas: recommendations for the national LLIN distribution system and recommendations specific to the USAID-supported LLIN distribution system.

National-level recommendations

- *Ensure national coordination:* The most significant recommendation focuses on coordination at the national level. Burundi should develop a national LLIN distribution plan that accounts for all the public-sector LLINs entering the routine distribution system; this will ensure that each district receives a fair share of the LLINs.
- *Improve supervision structures:* Improving the frequency and quality of supervision from the central level to both districts and health facilities has the potential to improve the management and implementation of the LLIN distribution system. Additionally, regular supervision would help to ensure the quality of documentation produced, both through reports submitted and records retained at the health facility- or district-level.
- *Standardize LLIN distribution systems:* Several districts are currently managing multiple LLIN distribution systems for different LLIN donors. Because of the limited staff resources at the district level, as well as established common target populations for all routine LLINs, it would make sense to streamline LLIN distribution, at least within each district.
- *Review quantity and timing of LLINs delivered to facilities:* In one pilot district, all facilities received large quantities of LLINs in the same month, regardless of their stock on hand. Capacity building by supervising the districts could improve their understanding of appropriate stock levels to maintain at the health-facility level.
- *Reinforce communication messaging:* A national integrated malaria **behavior change communication** (BCC) campaign could reinforce messaging about the importance of using LLINs consistently, in addition to promoting other malaria control prevention and treatment practices.
- *Modify public-sector LLIN packaging:* Ideally, to manage an integrated LLIN program, all public-sector LLINs should have the same packaging. If possible, the Ministry of Health should propose common packaging for all LLIN donors.
- *Introduce private-sector LLINs:* Recent information about the resale of LLINs indicates a real demand for LLINs through private-sector outlets.

- *Supplement routine LLIN supply for 2012 and beyond:* Approximate quantification estimates indicate that there is a 25,000–50,000 LLIN shortfall for 2012, compared with need.
- *Include LLINs in national quantification:* Establishing a formal quantifying and forecasting process for LLINs could minimize the risk of product stockouts. Efforts should be made to include LLINs under the National Quantification Committee already established under the Ministry of Health.
- *Replace LLINs distributed through universal coverage campaigns in 2009 and 2010:* Burundi risks losing significant ground on the Abuja targets, as the LLINs distributed in 2009 and 2010 universal coverage campaigns lose their effectiveness. While it is clear that significant resource constraints exist, particularly for the Global Fund, all possible attempts should be made to maintain household coverage for LLINs.

Recommendations for USAID | DELIVER PROJECT/PSI LLIN distribution

- *Standard operating procedures for distribution:* Given the confusion in pilot districts about the program's procedures related to documentation and reimbursement, a set of standard operating procedures, including roles and responsibilities at each level of the system, could increase the districts' understanding of both the purpose of the program, as well as the process details.
- *Formalize recordkeeping:* Creating an electronic management system for tracking national and district distribution plans and delivery notes would facilitate more active management of LLIN distributions, as well as enable supervisors from the central level to call up relevant data prior to field visits.
- *Increase project personnel:* At present, the USAID-supported LLIN distribution program has only one full-time staff member. Increasing the staff on this project could significantly improve the quality of implementation and could help support capacity building activities needed at the district- and facility-level.

Background

In 2009, USAID expanded its malaria control program to Burundi, in sub-Saharan Africa, through the USAID | DELIVER PROJECT, Task Order Malaria (TOM); under the Indefinite Quantity Contract, and implemented by John Snow, Inc. (JSI), and its partners, including Population Services International (PSI). The overall objective for TOM in Burundi is to rapidly scale up and support malaria control efforts in the country; to complement the Government of Burundi's interventions to ensure that investments are aligned, and to ensure that Roll Back Malaria and Millennium Development Goals can be achieved.

The scale up of long-lasting insecticide-treated bed net (LLIN) distribution is a key component of Burundi's overall malaria control and prevention strategy. A universal LLIN coverage campaign—with the goal of reaching a national coverage of one LLIN for every two people—was implemented via rolling campaigns between 2009 and 2011, eventually reaching all districts. Due to challenges with the current financial standing for the **Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria (GFATM)**, the next universal coverage campaign, planned for 2013, has been delayed until 2014. LLINs continue to be made available through mass distribution campaigns, routine distribution, and, previously, social marketing.

According to the Burundi FY2011 Malaria Operational Plan, PMI expects to procure and distribute 530,000 LLINs through the USAID | DELIVER PROJECT in 2012; UNICEF intends to procure and distribute 150,000 LLINs in selected convergence districts.¹ The GAVI Alliance² plans to provide an additional 30,000 LLINs in 12 districts, also for routine distribution. In addition, the Red Cross conducts *keep up* activities in two provinces, where they estimate 74 percent of household LLIN coverage and 61 percent utilization (down from 93 percent coverage and 81 percent utilization, six months after the 2010 campaign³).

While Burundi is fortunate to have multiple LLIN donors, concerns remain in-country about the adequacy of these LLIN resources, given anecdotal reports of facility-level stockouts and the recent appearance of LLINs in Bujumbura's central market⁴.

PSI is leading the USAID-funded malaria activities in Burundi. Over the last two years, they have supported the routine distribution of LLINs through antenatal and children's vaccination clinics. In the current year, PSI's scope is focused on the routine distribution of LLINs, including an intensified pilot distribution program in 10 districts. PSI worked closely with Burundi's National Malaria Control Program (NMCP) to establish a national LLIN distribution plan down to the district level. LLINs are currently distributed through the routine system to pregnant women and children when they complete their vaccines at preventive health services, at the health-facility level. PSI currently has one dedicated staff person to manage the routine LLIN distribution program.

¹ UNICEF convergence districts are where support from all UNICEF program areas join together to maximize impact.

² The GAVI Alliance was formerly the Global Alliance for Vaccines and Immunisation.

³ Interview with Burundi Red Cross, April 5, 2012.

⁴ At the end of February 2012, 1,315 LLINs were collected from vendors in Bujumbura's central market. Of these, 17 were positively identified as USAID-procured. Reports from the collection indicate that many of the LLINs appeared to be used.

In non-pilot districts, the district health office allocates their LLIN consignment between all their health centers. PSI is responsible for the logistics of transferring LLINs to the district level (via a hired truck) and then from the district to the health center (via a PSI vehicle). PSI retains copies of the delivery notes from the district- and facility-level.

LLIN Pilot Program

The LLIN pilot program is based on the principle of treating LLINs as essential commodities and managing them the same way essential medicines are managed, and with the same controls. PSI initiated the pilot as part of an effort to improve the management of LLINs at the facility level. In pilot districts, PSI delivers the district’s quota of LLINs to the district health office. Each district is responsible for storing the LLINs and delivering them to the health centers through a *pull* system—health centers submit a requisition to the district health office for the LLINs they need. The district then delivers the LLINs to the health center, which is confirmed through a signed delivery note. Copies of both the requisition and delivery note are returned to PSI, with a monthly report on the number of LLINs distributed through the antenatal and vaccination health services. Districts are reimbursed by PSI at a flat rate for LLIN distribution, as well as for monthly supervision visits to health centers to oversee LLIN activities. Currently, there are ten pilot districts in nine provinces and the pilot’s proposed trial period is one year.

Considering the criteria established for pilot district selection (focusing on adequate warehouse space and a minimum of two vehicles available to facilitate LLIN distribution and supervision), pilot districts may not represent other districts. For example, it appears that pilot districts are larger, on average, than non-pilot districts (see table 1), and may have more significant resources than non-pilot districts. That being said, Burundi is a relatively small country and none of the pilot districts are urban, so even measurable differences between pilot and non-pilot districts may not indicate meaningful differences between districts.

Table 1. Pilot District Size

Health Centers Per District	No.
Average no. health centers per district	13.2
Average no. health centers per district (pilot)	15.6
Average no. health centers per district (non-pilot)	12.7

From March 26 to April 13, 2012, the USAID | DELIVER PROJECT assessed the USAID-supported routine LLIN distribution in Burundi in an effort to review the quality of programming and to assess concerns about the potential leakage of LLINs. The field work was conducted.

Objectives

The objectives of the assessment were to—

- Verify the quality of the USAID-funded routine LLIN distribution and controls, including comparing the performance for LLIN tracking pilot districts versus control districts.
- Determine the severity of current and/or potential stockouts, and highlight the risks for LLIN leakage within the routine distribution system.
- Identify concrete steps for improving the USAID-funded LLIN distribution.

Methodology

Staff from the headquarters at the USAID | DELIVER PROJECT visited Burundi between March 26 and April 13, 2012, to conduct a phased-assessment of the USAID-funded malaria activities, under the USAID | DELIVER PROJECT, and implemented through PSI/Burundi.

The first phase of the assessment was a desk review of LLIN delivery notes from LLINs distributed in 2011. The desk review covered both pilot and non-pilot districts where PSI continues to conduct routine LLIN distribution activities. Project documents reviewed included distribution plans, LLIN delivery notes, recent LLIN-related operational research, templates for district- and health-facility reports, communication materials, and copies of updates to the mission.

During the second phase of the assessment, site visits were made to determine the accuracy of the information contained in the delivery notes and distribution reports. Field visits included four rural and three urban districts, including the two pilot districts. Efforts were made to sample both urban and rural facilities, as well as both pilot and non-pilot districts. For logistical purposes, Gitega province was selected for visits because it is the only province that has two pilot districts. This part of the assessment focused on confirming the receipt of USAID-procured LLINs, as well as examining whether the distribution plan established by PSI/Burundi, in collaboration with the **National Malaria Control Program (PNILP)**, was followed. During field visits also examined physical storage facilities where LLINs are stored. The focus remained on identifying potential areas where the distribution system strength could be improved.

As part of determining the risk of stockouts, an informal LLIN quantification was done to estimate the ongoing need for routine distribution. The quantification's intended use was to establish whether current routine LLIN supplies were adequate for current needs. It is acknowledged that given the large gap between universal coverage campaigns, it is unlikely that routine LLIN distribution will be able to maintain household LLIN coverage at levels attained during the mass distribution campaign.

Finally, the assessment identified areas to improve the quality of USAID-funded routine malaria control programming under this contract, as well as highlighted program strengths that should be sustained.

Results

Note: Staff entered data on 45 district health offices and nearly 600 health facilities into a spreadsheet to complete this analysis. While every effort was made to minimize data entry errors, it is possible that, due to resource constraints, double-entry may have occurred. It is possible that this analysis may have minor data entry errors.

Desk Review

A desk review of LLIN documents at PSI/Burundi's office included project documents, such as LLIN distribution plans, as well as confirmatory receipt documentation. The desk review covered both pilot and non-pilot districts where PSI is currently engaged in routine LLIN distribution activities.

The key project documents were reviewed, including distribution plans, LLIN delivery notes, recent LLIN-related surveys, templates for district- and health-facility reports, communication materials, and copies of updates to the mission. Staff did not find any concept notes or written descriptions, with the exception of a summary in the project's workplan for the pilot program that began in late 2011.

The documentation on LLIN distribution (primarily delivery notes) on file at PSI is extensive, with documents showing no evident signs of fraud or tampering. The available documentation confirms that most of the USAID-funded LLINs have been and continue to be moved through the distribution system, as planned. Overall, documents to track the LLINs from the central level to the district level to the peripheral level are on file, although there are several gaps.

In general, the quality of documentation is good. However, there is a minor, but significant number, of hard copy documents that are either incomplete (missing date, delivery point, or reception stamp) or illegible (indecipherable handwriting or official stamp over key information). In one case, it was difficult to assess whether a duplicate copy of a delivery note was submitted or whether two deliveries had been made, a challenge that could be averted if consecutively numbered delivery notes⁵ were used. Also, at the time of the initial review, two of the non-pilot districts' distribution plans were not available. One was located during the assessment; however, the other was not. A third distribution plan was hand-written and difficult to read.

The hard copy delivery notes were available; however, there is no electronic database or spreadsheet that tracks quarterly data from the district level and health-center level. This makes it difficult to assess, at a glance, the quantity of LLINs distributed or consumed.

The result of these issues is that a small number of uncertainties remain in the data that had not been corroborated or verified at the time of the desk review. In addition, the country office had not analyzed the data from the first quarter of implementation (October–December 2011).

⁵ There is currently a space to insert a number on the delivery note but many are not completed. The feasibility of numbered delivery notes from the district- to the facility-level is uncertain.

Furthermore, there is no master list of health facilities that are eligible to receive LLINs. While it is understandable that government health centers may open and close over the course of LLIN distribution, it is impossible to verify through a desk review if health centers not on the original distribution are new facilities or *ghost* facilities⁶.

After the discovery of LLINs in Bujumbura’s central market, concerns about leakage within the distribution system have been raised in-country. Given the documentation reviewed during this portion of the assessment, this assessment posits that it is unlikely that there is leakage between the central level and district level or the district level and facility level. For this to occur, there would have to have been widespread collusion between project personnel, transporters, and multiple staff at both the district health office and the district’s health centers to falsify a myriad of signatures on delivery notes from the central level to the district and then from the district level to the health-center level.

The desk review revealed that delivery notes from PSI’s warehouse to the district health offices were available for 100 percent of the 415,000 LLINs that PSI reports to have distributed, according to the national distribution plan (see table 2). Delivery notes are also available for 412,337 LLINs from the district level to the health-center level⁷. Among the delivery notes PSI currently has on file (through December for most districts, with a few January and February reports available); currently, there are no delivery notes available from the district level to the facility level for 24,138 LLINs that were delivered to the district level. This assessment assumes that these LLINs are buffer stock at the district level, or they have reached health facility level since December, but confirmatory documentation has not yet been submitted to PSI. Reports submitted by the districts to PSI for the January to March 2012 quarter will clarify this information.

Table 2. National LLIN Summary Data

LLIN Delivery Status	No. or Percent
Number of LLINs with confirmed delivery to district level	415,000
Percentage of LLINs with confirmed delivery to district level	100%
Number of LLINs with confirmed delivery to health centers ⁸	390,862
Percentage of LLINs with confirmed delivery to health centers	94%
Nets delivered to district level, not yet delivered to health centers	24,138
Districts reporting excess LLINs delivered to facilities	6 (of 45 districts)
Planned delivery points with no confirmation of LLINs received	16 (of 593 facilities)

The majority of undelivered LLINs—approximately 6 percent of the total LLINs—are in the 10 pilot districts; however, there are several non-pilot districts where health facilities have not received all the allocated LLINs. Because PSI delivered non-pilot districts’ LLINs directly to health facilities, the fate of these *undelivered* or *over-delivered* non-pilot LLINs is unclear. Some may still be at the district level as buffer stock. As there is one non-pilot districts with reports of receiving more LLINs than planned (500 LLINs or five bales more), it is possible that some of the LLINs were delivered

⁶ Facilities which appear on a list but do not exist or are not functional.

⁷ While delivery notes confirm receipt of 412,337 LLINs to the facility level, further analysis indicates that at least 21,475 of the LLINs reported from pilot districts LLINs were probably procured by another donor.

⁸ Delivery notes confirm receipt of 412,337 LLINs; however, 21,475 of those are unlikely to be project LLINs due to overages reported in several districts.

to a different district than originally scheduled. Without complete distribution plans for all districts, it is difficult to ascertain the source of these small-scale discrepancies.

Indeed, six districts submitted delivery notes showing more LLINs than what PSI had allocated; including five pilot districts, plus the district without a distribution plan (Muramvya). Among the pilot districts, it is possible that the districts have submitted delivery notes to PSI for LLINs from another donor, because both UNICEF and the GAVI Alliance LLINs are in circulation in various districts. No distribution plan is available for Muramvya, so it is difficult to determine which health center(s) received the excess and whether these were PSI LLINs or those health centers had access to another donor's LLINs.

Nationally, nine non-pilot health centers received the wrong number of LLINs listed in the distribution plans on record, with some showing a receipt of more LLINs than allocated and others less. This may be due, in part, to new facilities that were allocated LLINs after the plan was made, or closed facilities whose allocated LLINs were later allocated to another health center. It is also possible that mistakes were made in completing the delivery notes, which have not been rectified. For example, in Gohombo district, delivery notes reflect that Muhanga I received both the 700 LLINs it was allocated and an additional 600 LLINs; while Muhanga II—allocated 600 LLINs in the district distribution plan—did not receive any LLINs. It is unclear whether there was an error on the delivery note that incorrectly reflected the health center's name, or the LLINs were delivered to the wrong health center. Alternately, Muhanga II could have closed or stopped offering LLIN services, and the LLINs were purposely reallocated to Muhanga I.

Additionally, there are no delivery notes for 16 health facilities and one district warehouse, which was scheduled to receive buffer stock. It is unclear whether these facilities did not receive LLINs because they already had adequate stock on hand, because a delivery note never existed for the delivery, or because the delivery note was not returned to PSI.⁹ It is also, theoretically, possible that these LLINs were diverted. PSI is following up with the facilities to determine specific information for each health facility.

Pilot districts

In addition to delivery notes, pilot districts submit monthly data to PSI that document LLINs distributed to the target population, as well as a copy of LLIN requisitions from the facility level to the district level (see table 3). This gives the central level a clear view of LLIN distribution dynamics at the lower levels of the system. A large percentage of the requisitions from the service delivery points for LLINs have the same date as the delivery note, which poses the question of who is completing the requisitions and with what information. It is unclear whether this is a result of health facility staff completing requisitions on the day they visit district health offices to collect LLINs, or whether district staff is helping to complete these forms and deliver the LLINs during routine visits, possibly for supervision.

⁹ Information available during the writing of this report indicates that at least two of these facilities have received LLINs, although the delivery note was not yet on file at PSI. Another facility reported stock available from a previous distribution was still on hand.

Table 3. Pilot District Distribution Data

Status of LLIN Delivery and Report Submission	No. or Percent
Average no. LLINs delivered per month to health centers in pilot districts	13,354
Average no. LLINs distributed per month to population in pilot districts	6,999
% of pilot district LLINs distributed from health center to population	39%
% of pilot district health centers who submitted reports for October	87%
% of pilot district health centers who submitted reports for November	97%
% of pilot district health centers who submitted reports for December	96%

Data from the first quarter of the pilot program show that 39 percent of LLINs have already been distributed to beneficiaries. Given that this consignment of 415,000 LLINs is intended to last nine months, the consumption is high.

A review of delivery notes and requisitions from pilot districts also revealed that, particularly, in Burundi, nearly all facilities received an LLIN delivery in November, but no deliveries are reported in any other month. In addition, requisitions revealed that health facilities received a significant number of LLINs, regardless of their stock on hand. Delivery notes for several other districts revealed that districts are breaking open bales of LLINs when delivering resupply to facilities, a practice which can enable leakage.

Site Visits

Six district health offices¹⁰ and seven health facilities were visited during the assessment, including two pilot districts: Mutaho and Kiganda. Visits focused on evaluating stock card completion and accuracy, and comparing data submitted to PSI with primary data sources at the health facility. The visits also examined storage conditions at both the district level and the facility level, as well as relative stock levels.

The comparisons between the stock cards and stock counts were highly informative. At the district level, the majority of depots had up-to-date stock cards, with the exception of Buhiga and Kibuye. Buhiga's stock card was most recently updated in late January 2012; and did not reflect an accurate record of the stock on hand (416 listed on the stock card versus 700 LLINs physically counted). This type of situation creates a significant risk of pilferage. It was noted that in non-pilot districts, PSI LLIN stocks were not entered into the stock card at the district level because they were quickly transferred to the health-facility level, so the district never managed them.

Comparisons between the stock cards and physical stock counts at the facility level presented a more subtle challenge. While the stock cards did not match the stock on hand in any of the storerooms, almost every facility (5 of 7) demonstrated that the stock reflected on the stock card had been accurate at the beginning of the day. The discrepancies result from confusion on the part of staff as to the time to update the stock card and how to transfer stock from storeroom to *dispensing* services (pre-natal and vaccination clinics). It also became clear that several health facilities are not conducting monthly physical inventories of LLINs in stock; this also contributed to discrepancies in the stock card balances. These issues can be addressed during routine supervision visits from the central level.

¹⁰ No one was available at the Nord district health office on the day of visit.

In addition to observations about stockkeeping, it was also noted that only one of the 13 storerooms visited used pallets to store the LLINs; the other storerooms kept LLINs directly on the floor. All but one were locked and secured. The Bujumbura Centre district health office is currently keeping LLINs in a hallway because they do not have adequate storage space.

On the day of the visit, Kamenge Health Center was the only site without significant stock on hand. They only had five LLINs in stock; they told us that the Bujumbura Nord district health office, unavailable on the day of visit, was stocked out. The other district health offices and health facilities all had LLIN stock on hand.

Table 4. Site Visit Findings (boldface lines indicate pilot districts)

District	Stock Card	Stock Count	Health Facility	Stock Card	Stock Count	Monthly Report (Dec'11)	LLIN Register (Dec'11)
Mutaho	775	776	Bugendana	366	364	184	198
Kibuye	4983	4946	Maramvya	220	215	150	149
Buhiga	416	700	Buhiga	554	623	NA	174
Kiganda	800	800	Gatabo	175	170	127	124
Nord	NA	NA	Kamenge	5	6	NA	192
Sud	1291	1291	Kanyosha	200	200	250	231
Centre	200	200	Bwiza-Jube	242	237	119	125

NA = not available

Interestingly, the site visits revealed that many districts are actually managing two different LLIN systems. In one non-pilot district, the district received LLINs from both USAID and UNICEF. While USAID's LLINs were delivered to facilities by PSI, facilities used a requisition system similar to that of the pilot program to request additional UNICEF LLINs from the district level. On the other hand, the pilot districts visited both receive additional LLIN stock from other donors, and they manage other donors' stock via a *push* system outside the pilot system PSI is implementing. The result is that many districts are managing two separate LLIN distribution systems to serve health facilities.

Monthly LLIN reports were available for pre-natal and vaccination services from five of the seven facilities visited. For the five facilities where comparisons were possible, there were discrepancies in every one between the number of LLINs reported as distributed to pregnant women and vaccinated children, versus the number found in the service registers. In some cases, discrepancies could be the result of policies surrounding performance-based financing (PBF), which requires complete identification records for each patient. For example, if an address or Burundian ID card was not provided for a client receiving an LLIN, she may not appear in the LLIN register, so as not to retain incomplete records under the PBF program. While the PBF program appears to have improved data availability and quality throughout the health sector, there are complications. Another cause of the discrepancy may be that some facilities provide LLINs through maternity services—not officially part of the routine LLIN distribution strategy—which poses reporting challenges. Some facilities include these LLINs in their reports, while others do not.

Pilot districts

Several observations were specific to the pilot districts. Both pilot districts visited were unable to explain, upon questioning, how the fuel reimbursement system worked for activities funded under the pilot program. They indicated that the district-level staff did not clearly understand the design of the pilot program or their role in it. Additionally, pilot districts are charged with once per month supervision to ensure proper management procedures are followed for LLINs. Several supervision registers revealed that, while supervision visits were made to health facilities, there were no specific comments in the register pertaining to LLINs or their management. It is not clear whether the supervision team covered LLINs in their visit but neglected to note any related comments, or if LLINs were not addressed.

The degree to which LLINs in pilot districts are viewed as essential medicines, which is the intention of the pilot program, it is not yet clear at this early point in the implementation. PSI has conducted one assessment thus far;¹¹ however, at this time, significant data are not available to determine the degree to which LLINs are consistently being treated as essential medicines (Olivi 2012).

LLIN Needs Estimation

To establish whether current LLIN supplies are adequate for Burundi's routine LLIN distribution program, two different methodologies were used for an informal quantification. The first methodology bases the needs estimation on the pilot districts' reports of LLINs distributed to target populations in November and December 2011, when most of the facilities had adequate supplies of LLINs. These consumption figures are then scaled to the national level, based on the proportional population of pilot districts as a percentage of the national population.¹²

With over 27,000 LLINs distributed in 10 pilot districts, comprising 23 percent of the total Burundi population in November and December, it is estimated that the national LLIN requirement for one year is 715,330 (see appendix A).

Using a population-based model, a second estimation of national need was calculated. Given that 92 percent of children complete their measles vaccination (the final vaccination *awarding* the LLIN) and 99 percent of pregnant women make pre-natal care visits, an estimated 739,747 LLINs are needed to fully cover routine services (see appendix A).

At this time, information available in country indicates that 810,000 LLINs are available for distribution in 2012, with the following breakdown:

- USAID (via the USAID | DELIVER PROJECT): 530,000
- UNICEF: 250,000¹³
- GAVI Alliance: 30,000¹⁴

Assuming that the figures for UNICEF and GAVI are correct, it appears that there are adequate LLINs for routine distribution in 2012. If Burundi's household LLIN coverage is already at risk because of delays in the follow-up universal coverage campaign, maintaining an adequate supply of

¹¹ Olivi, Elena, 2012. Assessment of Routine LLINs in 10 Pilot Districts of Burundi.

¹² Census figures from 2008 were used for population projections.

¹³ Information provided by USAID/Burundi.

¹⁴ Information provided by PSI/Burundi.

LLINs for routine distribution is critical for malaria prevention in-country. If donors can meet their LLIN commitments for 2012, Burundi should have an adequate supply to maintain strong routine LLIN distribution activities.

A more formal quantification exercise for LLINs in Burundi would be of great benefit, particularly for planning and LLIN resource mobilization. One potential instrument of coordination and capacity building in this area is the National Quantification Committee, already in existence. By including LLINs in the mandate for this committee, LLIN commodity security could be further ensured.

Observations on National LLIN Coordination

As table 4 indicates, all districts and facilities visited, except Bujumbura Nord, have stock at both the district store and the facility visited. Discussions with in-country staff revealed that USAID's LLINs, destined for all facilities in 2011, were allocated by the National Malaria Control Program, proportionally, across the districts. Additional LLINs, provided by UNICEF and GAVI, were included in the national gap analysis, but they are targeted to specific districts: UNICEF supports 15 districts, while GAVI supports 12. UNICEF and the GAVI Alliance LLINs appeared to be allocated to *their* districts, in addition to the USAID LLINs previously allocated to those districts. Thus, districts with more than one LLIN donor receive a larger than equitable share of LLINs available, while those that receive only USAID LLINs receive fewer LLINs than their share. The end result is that a district like Bujumbura Nord is stocked out of LLINs, while other district stores, like Kibuye, have nearly 5,000 LLINs on hand.

Supervision efforts for LLIN distribution would also benefit from central-level coordination. Expanding supervision plans from the central level to all districts would help alert central-level staff to ongoing challenges in the field and would enable decisionmakers to take immediate corrective steps.

In addition to issues of routine distribution, national coordination is needed to review the public sector LLIN packaging. All the LLINs seen during the assessment were packaged in the manufacturer's branded bag, with no additional marking. Because of the concerns about leakage and the recent discovery of LLINs in the market, it would be prudent to mark public sector LLINs, regardless of origin, with a common Ministry of Health logo and some slogan indicating that they are not for sale. The evidence of LLINs in the private sector indicates that there is a demand for the product. With the lag between universal coverage campaigns, making a legitimate private-sector LLIN available to the public could help bridge the gap until the 2014 LLIN campaign.

Recommendations

From this assessment, several recommendations are proposed. They focus on improvements to the LLIN distribution system and management, and also focus on both the national management of LLIN distribution, as well as the USAID-supported routine LLIN system.

Recommended Technical Assistance to Strengthen the National LLIN Distribution System

Ensure national coordination: The most significant recommendation focuses on coordination at the national level. Having multiple LLIN donors, combined with multiple LLIN management systems within districts, has created an overly complicated environment for public sector LLINs in Burundi. While USAID provides LLINs to all districts, other donors, such as UNICEF and GAVI, focus on specific districts scattered around the country. USAID LLINs are consequently allocated proportionally across all districts, in addition to the *top up* LLINs some districts receive from other donors. This results in some districts being overstocked, while other districts have stockouts. The best case scenario would be to develop a national LLIN distribution plan that considers all public sector LLINs entering the routine distribution system; this would ensure that each district receives a fair percentage of the LLINs available.

Improve supervision structures: Improving the frequency and quality of supervision from the central level to both districts and the health facilities has the potential to improve the management and implementation of the LLIN distribution system. Additionally, regular supervision would help to ensure the quality of documentation produced, both through reports submitted and records retained at the health facility- or district-level. Regular supervision could also ensure that best practices for managing commodities, such as regular inventories, are implemented. Currently, PSI only has funding to support quarterly supervisions from the central level to the pilot districts. Ideally, the central level—whether by PSI, NMCP, or jointly—should regularly supervise both the pilot and non-pilot districts.

Additionally, project supervision visits could be supplemented by integrating them with the USAID-supported End-Use verification activity¹⁵. End-Use verification is an opportunity to consistently and meaningfully integrate LLIN indicators into quarterly malaria indicator monitoring; it would provide a broader sampling of data and increase the opportunities to provide on-the-job support to health workers who manage LLINs.

Standardize LLIN distribution systems: Several districts are currently managing multiple LLIN distribution systems for different LLIN donors. Given limited staff resources at the district level, as well as established common target populations for all routine LLINs, it would make sense to streamline LLIN distribution—at least within each district—to ensure that only one tracking and distribution is operating in each district. This would both maximize staff efficiency, as well as create

¹⁵ End-Use verification samples health facilities nationally for routine supervision, focusing on key malaria indicators. In Burundi, End-Use verification is implemented by Management Sciences for Health through the Strengthening Pharmaceutical Services and Systems for Improved Access to Pharmaceuticals and Services projects.

a system that can aggregate information about stock status and distributions across LLIN donor programs. This applies to both pilot and non-pilot districts.

Review quantity and timing of LLINs delivered to facilities: In one pilot district, all facilities received large quantities of LLINs in the same month, regardless of their stock on hand. Capacity building through supervision with the districts could improve their understanding of appropriate stock levels to maintain at the health-facility level. Additionally, and to the degree feasible, all districts should discourage staff from breaking bales of LLINs open during distribution; this will help prevent pilferage of LLINs, which may be more common and tempting after the bales are open.

Reinforce communication messaging: At this time, behavior change communication (BCC) efforts are in place but data from the Red Cross shows a decline in LLIN usage since the universal coverage campaign. A national integrated malaria BCC campaign could reinforce messaging about the importance of using LLINs consistently, and could promote other malaria control prevention and treatment practices.

Modify public sector LLIN packaging: Currently, there are no common labeling standards for public sector LLINs in Burundi. Ideally, all public sector LLINs should have the same packaging; this would facilitate managing an integrated LLIN program. If possible, the Ministry of Health should propose common packaging for all LLIN donors. If that is not possible, all public sector LLINs should be marked with a Ministry of Health or other government logo, and marked *Not for Sale*. Currently, while there is no indication of significant LLIN leakage from the public sector distribution system, this type of marking may discourage private-sector vendors from selling public-sector LLINs. If LLINs do appear in the private sector, the marking will clearly indicate the public sector LLINs, not a legitimate private sector good for sale.

Introduce private-sector LLINs: Recent information about the resale of LLINs¹⁶ indicates that there is a real demand for LLINs through private sector outlets. Anecdotal information indicates that LLINs were being sold for between 3,000 and 9,000 francs (approximately U.S.\$2.00–\$6.50). A willingness-to-pay survey should be conducted to establish fair and equitable pricing for private-sector LLINs; however, preliminary information suggests that a cost recovery LLIN might be viable, at least in urban areas.

Supplement routine LLIN supply for 2012 and beyond: Rough quantification estimates indicate that there is a 25,000–50,000 shortfall for LLINs for 2012, compared to need. Filling this gap will ensure access to LLINs through routine preventative health services for those most at risk for malaria.

Include LLINs in national quantification: By establishing a formal quantifying and forecasting process for LLINs, the risk of product stockouts can be minimized. An effort should be made to include LLINs under the National Quantification Committee already established under the Ministry of Health.

Replace LLINs distributed through universal coverage campaigns in 2009 and 2010: Burundi risks losing significant ground on the Abuja targets, because the LLINs distributed in 2009 and 2010 universal coverage campaigns are losing their effectiveness. While it is clear that there are significant resource constraints, particularly for the Global Fund, any possible attempt should be made to maintain the household coverage of LLINs. To the degree possible, this should be supported through routine LLIN distribution, if resources are not available for a subsequent campaign.

¹⁶ A survey of Bujumbura's central market recently found approximately 3,000 LLINs for sale. The majority of these LLINs appeared to be used.

Recommended Actions to Strengthen USAID-supported LLIN Distribution

Standard operating procedures for distribution: Given the confusion in pilot districts about the program's procedures related to documentation and reimbursement, a set of standard operating procedures, including roles and responsibilities at each level of the system, could greatly benefit the districts' understanding of both the purpose of the program, as well as the process details.

Formalize recordkeeping: Creating an electronic management system for tracking national and district distribution plans and delivery notes would enable program managers, both at PSI and NMCP, to be immediately alerted if a facility has not received a scheduled LLIN delivery, or if facilities are receiving more or fewer LLINs than allocated. This would facilitate more active management of LLIN distributions, as well as enable supervisors from the central level to call up relevant data prior to field visits.

Increase project personnel: At this time, the USAID-supported LLIN distribution program has only one full-time staff member. Increasing the staff on this project could improve the quality of implementation significantly and could help support capacity building activities needed at the district and the facility level. Ideally, two additional positions are needed: one to support data collection and the above-mentioned effort to formalize data and analysis efforts; and another to support communication activities. Both positions should include a strong capacity building component in their position descriptions.

Conclusion

The USAID-supported LLIN distribution system in Burundi has a strong foundation and continues to secure the delivery of LLINs across the country. Currently, 100 percent of USAID-supported LLINs have been distributed to the district level and 94 percent have confirmed delivery to the facility level. With secure storage facilities, the main risks to LLIN physical security are poor storekeeping and management practices in those facilities that fail to maintain stock cards, or fail to conduct routine inventory exercises.

Lack of adequate coordination of LLIN activities at the national level presents a real and significant risk to Burundi's LLIN program. Burundi currently has adequate resources for approximately 95 percent of routine LLIN distribution needs for 2012. If LLIN resources from all sources are proactively managed, in an integrated setting, the country should be able to minimize stockouts at the facility level and ensure that those who need LLINs are able to receive them.

Currently, the greatest risk to Burundi's attainment of universal LLIN coverage is the gap between campaigns. Because approximately half the country was covered during the initial 2009 LLIN, delaying the next campaign to 2014 will have a significant impact on household coverage—and, consequently, the use of LLINs. While increasing the availability of LLINs in the private sector can help bridge this gap, adequate funding to address the overall gap could protect a significant percentage of the population; who, otherwise, would not have access to LLINs.

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Appendix A

Two needs assessments were done to approximate the number of LLINs needed to meet the needs of Burundi's routine LLIN distribution system for 2012. Both methods for the assessments used the extrapolated population figures from the 2008 Burundi Census, which projected a population of 8,854,998 in 2012.

Consumption-based Needs Estimate

(This assumes uniform consumption of LLINs by the target population throughout the calendar year.)

Total reported LLIN consumption in pilot districts during November and December 2011: 27,421 LLINs

Total projected need for routine LLIN distribution in pilot districts: 164,526 LLINs

Percentage of total national population in pilot districts: 23 percent

Total projected need for national routine LLIN distribution: **715,330 LLINs**

Population-based Needs Estimate

(This assumes that each child completing vaccinations and pregnant woman will receive an LLIN, and that no additional target populations will receive LLINs.)

Percentage of the population under 12 months: 3.7 percent

Percentage of one-year-old children receiving measles vaccination (final vaccination in child series, conferring LLIN eligibility¹⁷): 92 percent

Percentage of the population comprising pregnant women¹⁸: 5 percent

Percentage of pregnant women visiting antenatal services at least once: 99 percent

Total projected need for national routine LLIN distribution: **739,747 LLINs**

¹⁷ UNICEF Fact Sheet, http://www.unicef.org/infobycountry/burundi_statistics.html

¹⁸ 2010 Demographic and Health Survey

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