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Malaria Logistics Highlights

Control Measures Greatly Reduce Leakage of LLINs in Liberia

USAID | DELIVER PROJECT 2010

Warehouse staff members pre-position the LLINs for distribution the following day.

Using numerous control measures, the project, in collaboration with its partners, successfully distributed all 480,000 LLINs—with no reported leakage.

As malaria prevention and treatment efforts are scaled up across the globe—including through producing, procuring, and delivering key commodities, such as artemisinin-based combination therapy (ACT) treatments and long-lasting insecticide-treated bed nets (LLINs)—there is increasing concern about the risk of leakage, i.e., loss, theft, or diversion of public health products. To ensure distributor accountability and product availability, it is necessary to analyze potential risks and implement corresponding control measures. Establishing the right control measures can mitigate the risk of leakage and help to ensure that the products reach the end user.

Under the Liberia National Malaria Strategic Plan for 2010–2015, the USAID | DELIVER PROJECT was requested to provide support in scaling up malaria prevention and control. The project assisted with procuring and distributing 480,000 LLINs for the 2010 President's Malaria Initiative (PMI) Liberia bed net distribution in Montserrado County. Unlike the previous two bed net distribution campaigns that the project supported, several new control measures were put in place that greatly minimized the risk of leakage and ultimately ensured the successful distribution of all 480,000 bed nets.

The project implemented the following key interventions:

- **Reduced the number of inventory holding points**. One centralized warehouse was used to store all the bed nets. The central location minimized leakage because the LLINs could be more easily monitored and fewer people were needed to handle and transport them.

- **Improved collaboration with local authorities**. Support was cultivated with local authorities, such as the National Malaria Control Program (NMCP), by involving them as managers in the distribution campaign. Contracting with local nongovernmental organizations (NGOs) to distribute the bed nets also fostered local ownership. A request for proposal was published and seven NGOs were ultimately selected for the distribution process.

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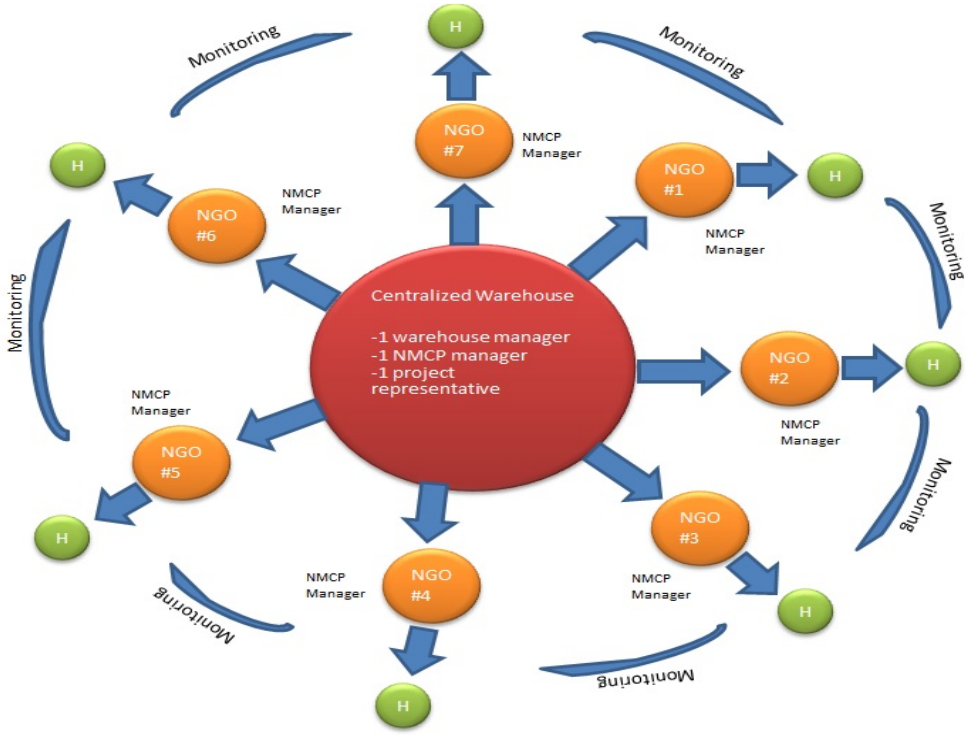
- **Assigned an NGO and NMCP manager to each distribution zone**. The NGO and NMCP managers were responsible for determining the number of bed nets needed in their assigned zone, reporting that information to the centralized warehouse, and coordinating the distribution of the bed nets, which community health volunteers delivered from the NGO to individual households. At the centralized warehouse, an NMCP manager, a warehouse manager, and a representative from the project oversaw the issue of all bed nets from the warehouse to the seven NGOs and eventually to 249,429 households by community health volunteers. Figure 1 shows the bed net distribution mapping.

Figure 1. Net Distribution Mapping



- **Pre-positioned the bed nets the day before distribution.**[1] Bed nets were pre-positioned the day before, based on next-day quantities needed. A ticketing system was used to track the order in which each NGO would receive its bed nets.
- **Issued bed nets in daily tranches, cross-checked by multiple staff**. The bed nets were issued by the warehouse in tranches, according to what was needed each day at the NGOs. During the first week of distribution, the project and its partners established a streamlined approach to distributing and documenting the bed nets. The warehouse manager, NCMP manager, and project representative cross-checked each tranche of bed nets that left the warehouse. Signatures were required from all three before the bed nets could leave the warehouse.

[1] Pre-positioning indicates that the bed nets were organized into tranches the day before they were to be distributed. This is a planning strategy that enables time to be saved by preparing the quantities in advance of when they are needed.

- **Used a tracking tool to increase inventory visibility throughout the supply chain**. The bed nets were tracked at every distribution point, starting from their issue from the centralized warehouse all the way down to their distribution to service delivery points. The project representative developed a master electronic reconciliation (MER) system that enabled tracking the number and location of bed nets distributed in real-time. The MER system was based on daily reconciliation of the distribution numbers using vouchers signed by each NGO/NMCP manager in the communities. The vouchers were brought back to the warehouse each time a truck arrived for a pickup. No new bed nets were allowed to leave the warehouse unless a voucher was received for the previous bed nets issued.
- **Held regular meetings and conducted ongoing monitoring.** To maintain communication about the distribution activity, project staff held daily meetings, made daily phone calls to the NMCP manager and NGO manager, and held biweekly meetings with the NGO directors and the NMCP assistant director. Project staff and each NCMP coordinator conducted ongoing monitoring to ensure that each NGO followed the proper distribution protocol.

Compared with previous campaigns, the control measures implemented in the 2010 LLIN distribution campaign were more cost-effective and required fewer staff members. For example, for the 2009 LLIN distribution campaign, six staff members were sent from the project, compared with only one for the 2010 distribution campaign. During the 2009 campaign, multiple warehouses were used because the scope was larger, covering three counties (Nimba, Lofa, and Grand Bassa), instead of one (Montserrado) in the 2010 campaign. The proximity of the central warehouse to the district-level pre-positioning sites and the number of districts in each county where the bed nets had to be transported (21 districts in Lofa county alone) led to higher transportation costs. Using numerous, dispersed warehouses, as opposed to one, was not only more costly, but made it more difficult to maintain regular visibility of the inventory as it was moving through the supply chain.

The country was satisfied with the outcome of the 2010 distribution campaign and motivated to use the same measures in future campaigns, with a key change of more time and resources built in for evaluation. Ideally, this addition will occur in the design stage instead of the implementation phase. It will be critical to gain political buy-in to ensure that the control measures used in the 2010 campaign can be replicated and maintained.

Conclusion

Using numerous control measures, the project, in collaboration with its partners, distributed all 480,000 LLINs—with no reported leakage. The project successfully promoted local ownership of the activity through contracting with local NGOs to distribute the bed nets; and involving key stakeholders, such as the NMCP, in each step of the distribution process. Reducing inventory holding points, increasing the visibility of inventory, improving monitoring, clarifying roles and responsibilities, and improving collaboration can all be effective interventions for ensuring that the risk of leakage is minimized and that products ultimately reach the end user.

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