

TECHNICAL BRIEF

DATA VISIBILITY MAKES ALL THE DIFFERENCE IN GHANA'S 2018 LLIN MASS DISTRIBUTION CAMPAIGN

Achieving Near-Nationwide Coverage

BACKGROUND



Registered household members queued up to receive LLINs from their local distribution center during implementation of mass distribution in the Western region. Photo credit: GHSC-PSM

In Ghana, malaria remains the leading cause of illness, and one of the three leading causes of death among children under five years of age. Malaria is endemic and perennial in all parts of Ghana, with seasonal variations that are more pronounced in the north.

Ghana's National Malaria Control Strategic Plan 2014–2020 aims to protect at least 80 percent of the population at risk with effective

malaria prevention interventions by 2020. The U.S. President's Malaria Initiative (PMI) provides financial and technical support to help Ghana achieve this objective.

The Ghana Health Service (GHS), through the National Malaria Control Program (NMCP) and in collaboration with development partners, including PMI, implements multiple malaria control interventions: indoor residual spraying, social behavior change communication, intermittent preventive treatment in pregnancy, and seasonal malaria chemoprevention.

Another key prevention activity is the distribution of long-lasting insecticide-treated nets (LLINs) through mass campaigns and continuous distribution through antenatal care clinics, child welfare clinics and primary schools targeting pregnant women, children under five years of age, and school-aged children, respectively.

The goal of the NMCP's 2018 LLIN distribution campaign was to achieve coverage of at least 90 percent of the general population, providing national access to and use of LLINs. PMI, through the USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project, supported this effort by providing a broad range of technical and financial assistance in implementing the 2018 campaign to achieve the set target.

LAYING THE FOUNDATION FOR CAMPAIGN SUCCESS

Piloting a New App for Data and Distribution Management

In 2017, GHSC-PSM participated in piloting a software solution called NetApp, working collaboratively with NMCP and Vector Works. NetApp was developed by the GHS and NMCP and is designed to enhance data collection, net allocation, analysis and data monitoring in real time with web connectivity during LLIN distribution campaigns. NetApp provides visibility into the number of household members registered prior to the actual LLIN distribution. As distribution data is entered, the app also displays the daily distribution trend per district or region in a graphic format. As a result of the successful pilot, the application was installed on 1,000 tablets supplied by PMI, as well as personal mobile phones for the 2018 campaign and was used to register households before the campaign's launch.

Procuring LLINs

Before nets were procured, GHSC-PSM with input from the NMCP, conducted an LLIN forecast to determine the number of LLINs needed for the campaign, using data from the 2010 National Population and Housing Census to make estimates. Based on the requirements for Central, Western, and Northern regions, the three PMI-supported regions, PMI—through GHSC-PSM—procured 4.66 million LLINs with an estimated value of \$10.5 million USD to augment the existing stock of LLINs for the campaign.

Using NetApp for Household Registration

Using the NetApp software, community health workers registered the names and size of each household in their catchment areas. This made it easy for the team to capture and relay high-quality household registration data, which subsequently improved the accuracy of LLIN allocation to the various distribution sites. It also helped address challenges associated with manual registration and distribution. Previous campaigns that relied on manual registration and planning faced shortages in allocations to regions where household registration missed some members as well as over-supply in allocations to other regions, where duplicate registrations occurred. NetApp provided more accurate registration data

and a dashboard with real-time data for monitoring distribution progress of the LLIN distribution.

Upon completion of the household registration using NetApp, stakeholders validated allocation estimates to obtain the final quantities of nets required for each distribution site. The use of the software enabled stakeholders to complete the validation within two days—an improvement over a previous paper-based exercise that was at least two weeks. GHSC-PSM used validated figures to amend pre-positioning plans for the third-party logistics (3PL) companies; outlining the details of the routes, number of districts per route, actual number of nets to be delivered within each district, among others.



National and district supervisors on site monitoring LLIN distribution. Photo credit: GHSC-PSM

Providing Orientation for Logistics Officers

For the 2018 campaign, GHSC-PSM worked with the NMCP to design training materials and conduct training in logistics management for the officers. As part of these trainings, 1,534 officers (drawn from national, regional and district levels)

received an orientation on different aspects of the standard operating procedures for logistics and supply chain management of public health commodities. Officer roles and responsibilities were outlined during the orientation. Logistics officers were oriented in the appropriate use of logistics monitoring tools, such as invoices, waybills, inventory control cards, and tally sheets. This was to ensure accountability as well as appropriate documentation for NMCP and GHSC-PSM.

Establishing Oversight and Accountability

To support community mobilization and advocacy for distributing LLINs to the communities, the NMCP formed a technical working group (TWG) and subcommittees ahead of the campaign to draw a roadmap and provide hands-on support and oversight. GHSC-PSM provided technical support to these committees. GHSC-PSM drafted a detailed distribution plan that was then finalized by the TWG and NMCP. To carry out the campaign, the following roles and responsibilities were articulated:

- **NMCP:** Provide overall leadership and management of LLIN distribution from the district level to the pre-positioning sites and distribution points.
- **National, regional, and district logistics officers:** Coordinate and monitor the campaign at each level of distribution.
- **GHSC-PSM:** Manage distribution from the central to the district level and provide overall technical guidance. Key support included:
 - Establishing a logistics implementation plan before the campaign.

- Developing tools and resources required for effective logistics and supply chain monitoring.
- Developing logistics training tools and materials to facilitate training.
- Providing lead logistics trainings for district and subdistrict logistics officers.
- Monitoring visits to distribution points during the campaign. This activity was conducted in collaboration with teams from NMCP, VectorWorks, regional health management, district health management, and PMI.



Orientation for district logistics officers to support LLIN mass distribution. Photo credit: GHSC-PSM

Leading Campaign Socialization

Before the campaign, district health workers and other influential community leaders led community mobilization and advocacy activities in their communities to educate people on the importance of LLIN use, the timing of the campaign, and where and when to pick LLINs. Also, communication vans, community information centers, community radio stations, gong-gong beaters, and other platforms were used to reach people at churches, marketplaces, mosques, antenatal care clinics, child welfare clinics, etc.

Contracting a Third-party Logistics Provider to Conduct Central- to District-Level Distribution

Before completing household registration through NetApp, GHSC-PSM used data and estimates from the forecast to begin procuring the services of 3PL transport providers for delivery to PMI-supported regions. These private transporters were subcontracted after a rigorous contracting and procurement exercise to convey the LLINs from the central warehouse contracted by GHSC-PSM to the district holding points for onward distribution over two weeks to the three PMI supported regions.

Moving from the District to the Last Mile

Microplanning at the district level led to the estimation of LLIN needs for each subdistrict. Based on the estimates, specific LLIN allocations were transported from the district stores to the subdistrict pre-positioning sites using varying transportation mechanisms (such as minivans and trucks of different sizes and capacities, tricycles, and motorcycles). The mode of transport

was informed by the volume of shipments and geographical nature of the subdistrict.

Once the 3PLs distributed the LLINs to the districts, the Ghana Health Service, through the NMCP, was responsible for distributing nets from the district level to subdistrict pre-positioning sites and final distribution points, where nets are handed to beneficiaries. Household registration data obtained from the NetApp guided in obtaining specific allocations of LLINs to subdistricts and subsequently to prepositioning sites. Pre-positioning sites were selected based on the security of the location, proximity to several distribution points, and capacity to serve as temporary storage for the nets. Distribution points included schools, church buildings, community-based health planning and services compounds, community centers, and other convenient locations. Logistics officers supervised activities at each level of the distribution chain to ensure efficient and uninterrupted supply of nets: they took receipt of consignments by verifying quantities delivered, signed appropriate waybill and invoices and subsequently received items into storage.

RESULTS

The LLIN mass distribution campaign spanned from February 13 to December 21, 2018, and reached 194 districts in nine out of 10 regions in the country. The target set by NMCP and stakeholders sought to distribute LLINs (one LLIN per two persons) to 90 percent of the registered population. National coverage of 89 percent was achieved, representing about 99 percent of the set target. Together, the Government of Ghana, PMI, and other stakeholders made significant gains in increasing LLIN availability through the campaign.

LESSONS LEARNED

During the LLIN mass distribution, lessons were learned that could be useful for future campaigns:

- In some occasions, LLINs experienced delays reaching distribution points from the district due to information gaps along the distribution chain, as well as insufficient transportation to promptly resupply LLINs at the distribution points. Supervisors worked with GHSC-PSM and the districts to arrange alternative transportation to move nets to challenging areas, however improvements could be made to this process by identifying alternative transport providers prior to the need arising and also implementing a regular communication strategy that will allow quick interventions when needs are identified.
- The use of technology for data visibility contributed immensely to the success of the campaign. Moving from a paper-based system to the NetApp software provided the team with real-time data for GHSC-PSM and the NMCP to monitor campaign progress and manage any challenges

presented. It also allowed the team to report accurately on campaign achievements, as well as track the number of commodities distributed over the course of the campaign. Future campaigns will benefit from the data collected on this campaign, as well as ongoing and improved use of the NetApp tool as teams become accustomed to it.

- NetApp errors—including data entry errors and no connectivity during household registration—created data challenges down the line. In some instances, details of registered beneficiaries could not be traced in the system, which resulted in delays and data entry issues. To minimize disruption, information technology officers from the NMCP provided prompt responses to system-related problems. Alternative internet service providers could also be explored as back-up in areas with notable poor connectivity. More information technology officers should be deployed at the sub-district level to proactively respond to system-related challenges.
- Leveraging the private sector using 3PL providers in the distribution from the central to the district level proved to be an efficient approach to LLIN distribution. For instance, goods in transit were insured and trucks had GPS trackers, so stakeholders could monitor the movement of the LLINs to the various locations. Also, 3PLs maintain a fleet of trucks and transportation that could traverse the challenging roads across the country.