Tracking with Text: Incorporating SMS–based Commodity Tracking for Malaria Control on PMI AIRS

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The PMI Africa Indoor Residual Spraying (AIRS) Project

- Funded by PMI, an interagency initiative led by USAID and implemented together with CDC
- Objective – to reduce the burden of malaria in Sub-Saharan Africa by planning and implementing high-quality, timely, cost-efficient, and effective indoor residual spraying (IRS) programs
- 2016 project outcomes
  - 3.7M structures sprayed
  - 13.7M people protected, including 425k pregnant women protected
  - 2.2M children under 5 protected
What is Indoor Residual Spraying?

- Cornerstone of WHO / US Government’s vector control approach:
  - IRS
  - Long-Lasting Insecticide-treated Bed Nets (LLINs)

- Effects of IRS:
  - Reduces the density of vector mosquitoes
  - Reduces the life span of vector mosquitoes so they can no longer transmit the malaria parasite from one person to another
  - Repels mosquitoes entering homes, thus reducing human–vector contact
Case Study: Mali

Context

- Three districts sprayed in 2016
- Two centrally located warehouses store all insecticides for spray campaign
- Insecticide dispatched to district “stores” as needed
- 21,769 bottles of insecticide used in 2016 campaign

Traditional Inventory System

- Each “store” manager is expected to keep track of insecticide quantities and decide when to request more

Source: mapsopensource.com
Case Study: Mali

❖ Operational Challenges
  • AIRS Mali uses small, secondary “stores” to store insecticides
  • Stores can’t house enough insecticide for the length of spray campaign
  • High risk of road incidents when carrying large quantities of insecticide
Case Study: Mali

Solution—“E-Inventory System”

- Field-created/driven
- Step 1: Storekeeper sends SMS from smaller “stores” to central warehouses
- Step 2: Central warehouse manager enters insecticide quantities into Access-based database
  - Database shows daily balance of insecticides from smaller “stores” and flags low quantities
- Step 3: Central warehouse manager requests more insecticide for smaller “stores” based on the flagged data
  - Central warehouse manager compares daily balances with daily targets and can report discrepancies

- Provides quick estimate of total amount of insecticide procured and used at the end of the campaign
Case Study: Mali

❖ Impact
  • Helps avoid stock-outs
  • Allows for shipping insecticide in a timely fashion
  • Helps program managers monitor status and report projected shortages to PMI

❖ AIRS Mali won the Innovation Award from PMI
Case Study: Mali

**Pros**
- Simple system
- Inexpensive
- Avoids insecticide stock-outs
- Movement of insecticide tracked
- Field-created

**Cons**
- Time-consuming for central warehouse managers
- Not automated
Case Study: Madagascar

Context
- IRS implemented in five districts in 2016
- Two main warehouses, several smaller “stores”
- Seasonal storekeepers manage smaller “stores”
- 53,212 bottles of insecticide used in 2016 campaign

Traditional System
- Each warehouse manager is expected to keep track of insecticide quantities and decide when to request more

Source: mapsofworld.com
Lots of interest from AIRS Madagascar

“E-Inventory” Improvements
• Used Mali’s innovation and expanded upon it
• Field M&E Manager hired a local company to automate data entry into the central system
• Can be accessed at any time, by multiple people
• Home office staff able to see real time commodity updates

Challenges
• Initial challenges to get technology in place
• Difficult to get staff to use it across the project
• Operations team was slow to adapt
Warehouses are red flagged if their insecticide stock is under the suggested stock minimum.

Minimum stock is determined by the warehouse and logistics manager and is based on the number of spray teams and accessibility.
Case Study: Madagascar

Pros
• Tracking of insecticide is now real-time
• If items go missing, alert is generated immediately
• Helps avoid stock-outs
• Saves time, since system is automated

Cons
• Higher cost compared to Mali
• Delay between implementation and behavior change
Recommendations for the Future

- Need buy-in from the field
- Not useful for every project
- Consider cell phone reception in country
- Consider benefits of using an international vs. local company

Potential Uses:
- Could be used to track stock and shipments of Rapid Diagnostic Tests (RDTs) and Artemisinin-based Combination Therapy (ACTs)
Thank you!