Jonathan Halse / Project Last Mile

Project Last Mile [PLM] in West Africa: Leveraging private sector expertise to develop effective and sustainable route-to-market (RTM) models to bring life-saving medicines to the last mile

11th Annual Conference on Health
and Humanitarian Logistics
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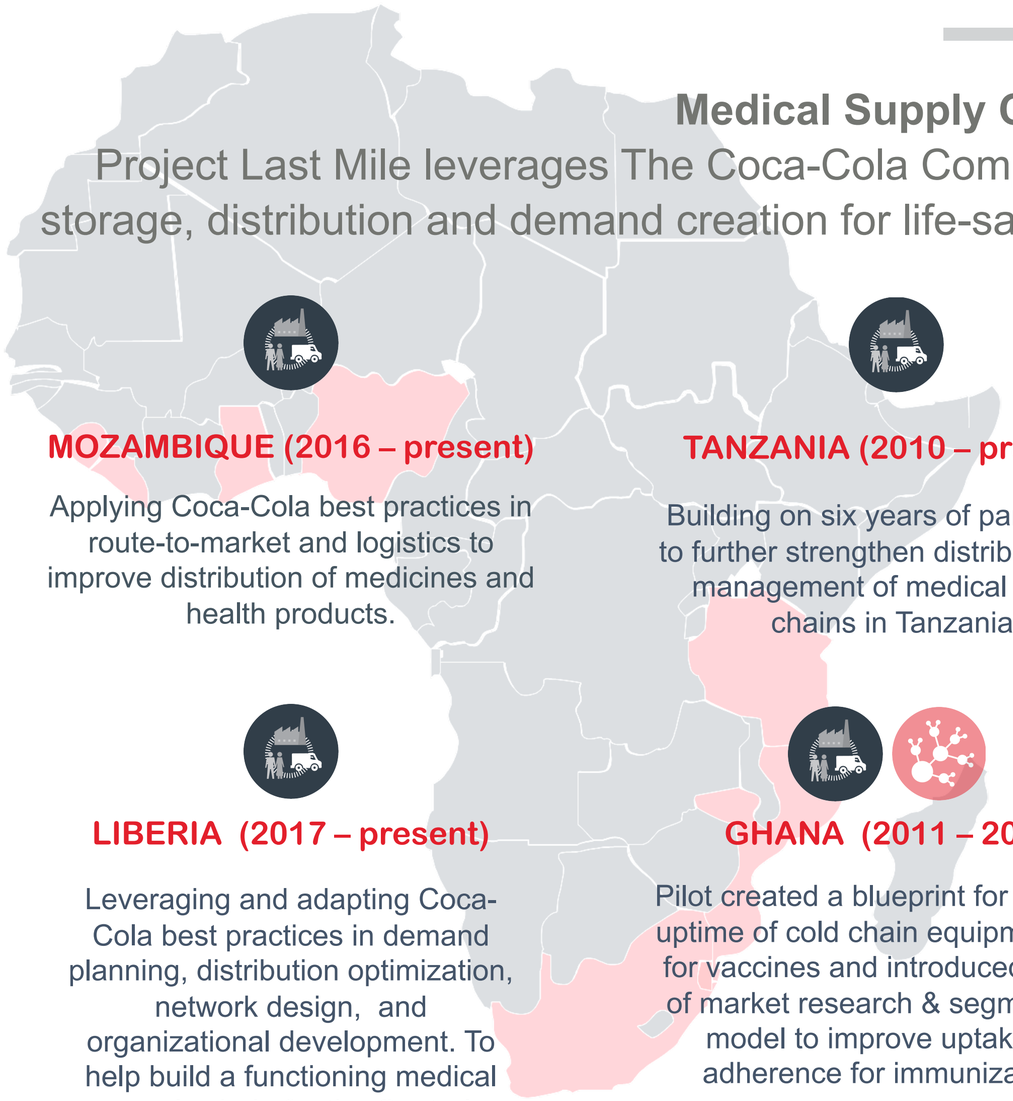
Introduction PLM Africa



Medical Supply Chains in 8 Countries Across Africa

Project Last Mile leverages The Coca-Cola Company's unique expertise to help governments make improvements to storage, distribution and demand creation for life-saving medicines and medical supplies in multiple countries across Africa

MOZAMBIQUE (2016 – present)

Applying Coca-Cola best practices in route-to-market and logistics to improve distribution of medicines and health products.

TANZANIA (2010 – present)

Building on six years of partnership to further strengthen distribution and management of medical supply chains in Tanzania.

NIGERIA (2017 – present)

Tapping into the Coca-Cola ecosystem to help improve uptime and management of vaccine cold chain equipment and save lives of children in Nigeria.

SIERRA LEONE (2018 – recent)

Leveraging and adapting Coca-Cola best practices in distribution and organizational development to support supply chain strengthening

LIBERIA (2017 – present)

Leveraging and adapting Coca-Cola best practices in demand planning, distribution optimization, network design, and organizational development. To help build a functioning medical supply chain for the Central Medical Stores.

GHANA (2011 – 2013)

Pilot created a blueprint for improved uptime of cold chain equipment used for vaccines and introduced the use of market research & segmentation model to improve uptake and adherence for immunizations.

SWAZILAND (2016 – present)

Leveraging and adapting Coca-Cola best practices in strategic marketing to support increased demand for health services for HIV prevention, especially focused on young women.

SOUTH AFRICA (2016 – present)

Leveraging the Coca-Cola network and route-to-market experience to help revolutionize distribution of chronic medicines for over 2 million people.

Liberia Supply Chain Redesign

Last Mile Redesign is a key component of the Project Scope for PLM in Liberia

WORK STREAM	SCOPE	OUTCOMES	DELIVERABLES
Supply Chain Redesign	1. Determine patient consumption demand 2. Understand current Supply Chain (SC) network design 3. Redesign SC distribution network 4. Model the supporting financials of the proposed SC 5. Pilot set up 6. Pilot implementation	1. Define population by Health Facility (HF), estimated demand per capita and 3-Year demand forecast 2. Identify current network capacity, distances, travel time, organization, infrastructure and inventory deployment 3. Determine optimum routing, delivery frequency, order capture, org capacity with gap analysis to current reality 4. Establish SC redesign costs and capital investment schedule 5. Define facility and technical support for pilot 6. Validate pilot and make adjustments based on results	• Optimized redesign of current supply chain network under Central Medical Stores (CMS), including required infrastructure, capabilities and costs • Pilot design and evaluation report • Present recommendations for national roll out

Liberia Supply Chain Redesign

Summary of Findings from initial evaluation done in May 2018

Current Reality	• **Recording of Patient offtake at the Health Facilities (HF) is inaccurate** due to poor discipline in completing management routines, forms and design of order calculation • **Significant over-capacity in truck fleet and warehousing** with corresponding utilization of assets running as low as 16% for truck fleet and 4% for County Depot warehouse capacity • **Organizational capability is limited** with minimal implementation of basic Supply Chain (SC) performance management routines and misaligned organization structure • **Quarterly service frequency is insufficient** to fully understand inventory flows at HFs and offtake of commodities
Recommendations	• **Customer Satisfaction Survey and "Look of Success"** introduced at HF storerooms to determine quality management and support SC service improvement • **Health Facility Service Policy refined and clearly articulated** as a basis for providing continuous improvement of the SC configuration • Route Supervisor role added to **monitor performance and develop CMS capability** • **Increase service frequency from quarterly to monthly** to fully understand inventory flows and accurate recording of offtake • **Service Technician (ST) to visit HF** the day before scheduled delivery-cycle-day to support capacity development of HF, execute "Look of Success", confirm inventory, generate requisition order and ensure accurate completion of LMIS routines • Route Delivery Driver (RDD) for distribution from County Depot to HF, with 1 **dedicated vehicle per route**, to conduct daily route routines that provide monthly delivery • **Management Dashboard will assist in performance management** of CMS to continuously improve overall effectiveness and KPIs of redesigned SC
Implementation	• **Introduction of a ST to support HFs** to accurately complete LMIS routines and execute the Look of Success • Implementation of **scheduled next working day delivery routing system** with consistent timing of calls to support HFs to ensure availability of commodities • **Increase the service frequency** to HFs from Quarterly to Monthly • **Dedicated vehicles** allocated to support delivery of Essential Medicines • **Introduction of a Planned Call** to guide the service delivery at HFs • **Ensure LMIS routines are completed accurately and timeously** to ensure offtake is fully understood and sufficient inventory available at HFs • **Monitoring of performance** through Management Routines and Dashboard to ensure full availability of Essential Medicines at all HFs at all time

Liberia Supply Chain Redesign

Facility segmentation showed low volume of deliveries on a quarterly cycle across a broad portfolio of commodities

		Classification	Number and Population	Commodities Stocked	Quarter Volume (m^3)
Hospital		• >50 Beds • Permanent capacity to manage common surgical conditions (including basic Intensive Care)	36 (5.1%) 362,700 (8.8%)	178	3.6
Health Centre		• 40 > Beds > 5 • Curative and preventative services • Small laboratory • Basic emergency and in-patient care	54 (7.7%) 746,600 (18.0%)	112	3.6
Clinic		• 5 > Beds • Basic curative and preventative services • Promotional health and basic mental health care • Management of conditions	611 (87.2%) 3,028,700 (73.2%)	159	1.1
Total			701 (100.0%) 4,138,000 (100.0%)	351	1.4

Liberia Supply Chain Redesign

Coca-Cola has portfolio of Last Mile Delivery models across Africa which were used to develop model for CMS in Liberia

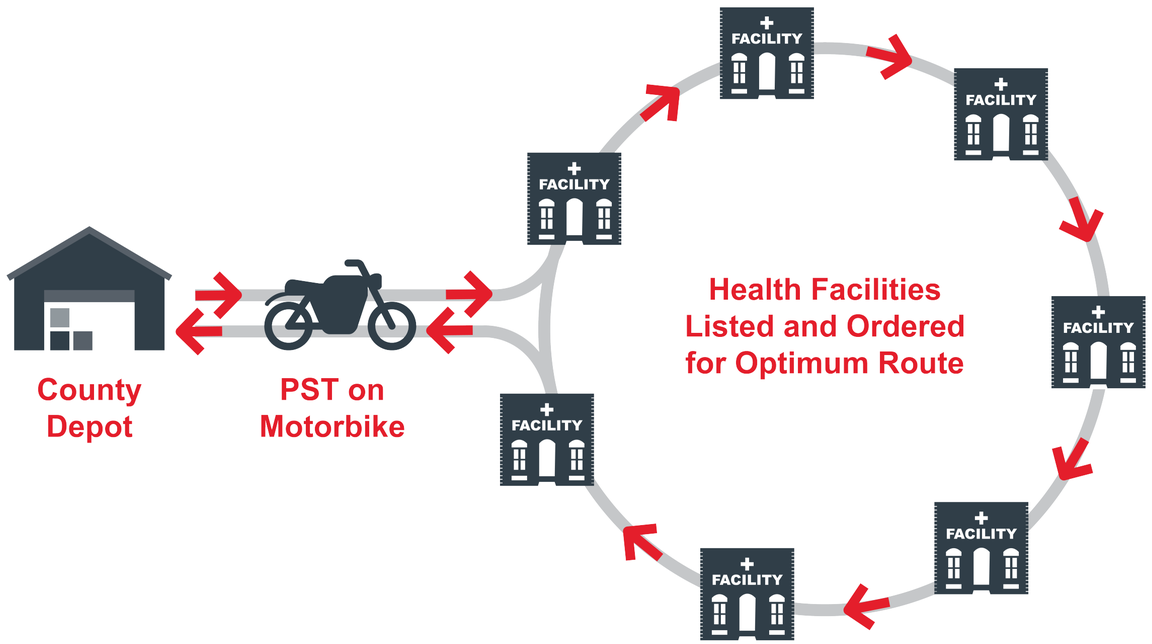
Complexity →

	Manual Distribution Centre	TruckSell	PreSell
			
Model	• Inventory held locally in **small to medium storage area** (shipping containers, informal market outlets) • **Manual pushcarts** used for delivery • **High delivery frequency** (2.00-6.00x weekly) • **High daily route visits** (30-60 outlets per day) • Product **sold and delivered at the same time** during the outlet visit	• Inventory held locally in **small to medium storage area** (shipping containers, informal market outlets) • **Small trucks** (<2.5T) used for delivery • **High delivery frequency** (1.00-3.00x weekly) • **Medium daily route visits** (15-30 outlets per day) • Product **sold and delivered at the same time** during the outlet visit	• Inventory held remotely in **medium to large storage area** (warehouse, central distribution centre) • **Large trucks** (>2.5T) used for delivery • **Low delivery frequency** (0.25-1.00x weekly) • **Low daily route visits** (10-20 outlets per day) • Product **sold by salesman** then **delivered next day**
Environment	• **High density outlet areas** (informal markets, taxi ranks, city centre) • **Small outlets** with limited range of items sold and limited storage • Outlets **inaccessible** for truck delivery • **Short travel distances** between outlets (<25m) • **Short stem distance** from storage • **Limited range** of SKUs delivered (<10)	• **Small to medium VPO** (General Trade and On Premise outlets) • **Limited range** of items sold • Outlets **accessible** for truck delivery • **Short stem distance** from storage (<5km) • **Limited range** of SKUs delivered (<10)	• **High VPO** (supermarkets, wholesale) • **Large outlets** with wide range of items sold and sufficient storage • Outlets **accessible** for truck delivery • **Long stem distance** from storage (>5km) • **Wide range** of SKUs delivered (>10)

Risks	• **High staff turnover**
	• Conflict between **physical delivery requirement and skill level** of staff
	• Need for **robust manual delivery carts**
	• **Regulation** constraints
	• Difficult to **source local secure storage** of sufficient capacity
		• **High staff turnover**
		• **Inaccurate load planning** leading to OOS on truck at end of route
		• **Inefficient use of high cost vehicle:**
		  • Long distance between outlets
		  • Long stem distance
		  • Low strike rate
			• **Increase in selling cost** with need for separate salesman and vehicle
			• Inefficient use of truck from **low drop sizes**
			• **Outlet accessibility** for large trucks
			• **Time required to offload deliveries** at outlet
			• **Security risk** from carrying cash from outlets after delivery

Liberia Supply Chain Redesign

Service model developed for CMS where Service Technician executes “Look of Success” at Health Facility on a fixed 4-week route cycle



- Service Technician **leaves County Depot on motorbike by 08:00** to travel to first Health Facility
- In each Health Facility visited the Service Technician coaches and assists the Storeroom Supervisor to complete **LMIS Management Routines**
- The Service Technician works with the Storeroom Supervisor to achieve the Look of Success in each Health Facility and generate a **Requisition Order where needed**
- 3x Health Facilities are visited on a **PrePlanned Route** with time recorded when arrive and when depart
- On completion of the last Health Facility visit the Service Technician **returns to the County Depot by 18:00**
- The Management routines completed by the Service Technician are **summarized and performance reviewed by the Supervisor**
- Requisition Order is picked and packed and loaded on to Delivery vehicle for **next working day delivery**

Liberia Supply Chain Redesign

Service Technician understands inventory flows at Health Facility and through requisition order process management ensures optimum inventory holding based on visit frequency

7-Step Planned Visit

1. PreVisit Preparation	• Review visit objectives against plan • Prepare new drug and other materials
2. Greet Supervisor	• Ensure Health Facility Storeroom Supervisor is present and available for visit duration • Gain agreement to execute Storeroom Check
3. Storeroom Check	• Check portfolio and storeroom quality • Identify opportunities for enhanced “Look of Success” execution
4. Generate Order	• Count and record stock • Calculate provisional order based on stock holding and consumption rate
5. Equipment Check	• Check location and working condition • Perform preventative maintenance routine • Move equipment if needed
6. Agree Order	• Agree final order with Storeroom Supervisor • Confirm expected time of delivery
7. Post Visit Review	• Review visit objectives achieved against plan • Set objectives for next visit

Quantity Requested (Ordered)

=

Opening Inventory Balance

+

Quantity Received

-

Loss/Adjustments

-

Closing Balance

=

Facility Offtake

X

1.5 (50% adjustment)

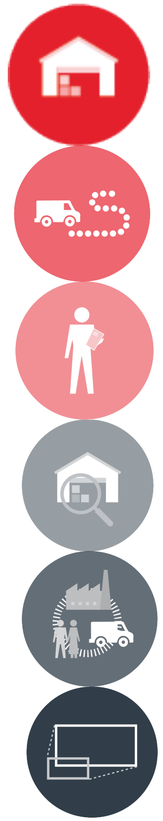
-

Closing Balance

Liberia Supply Chain Redesign

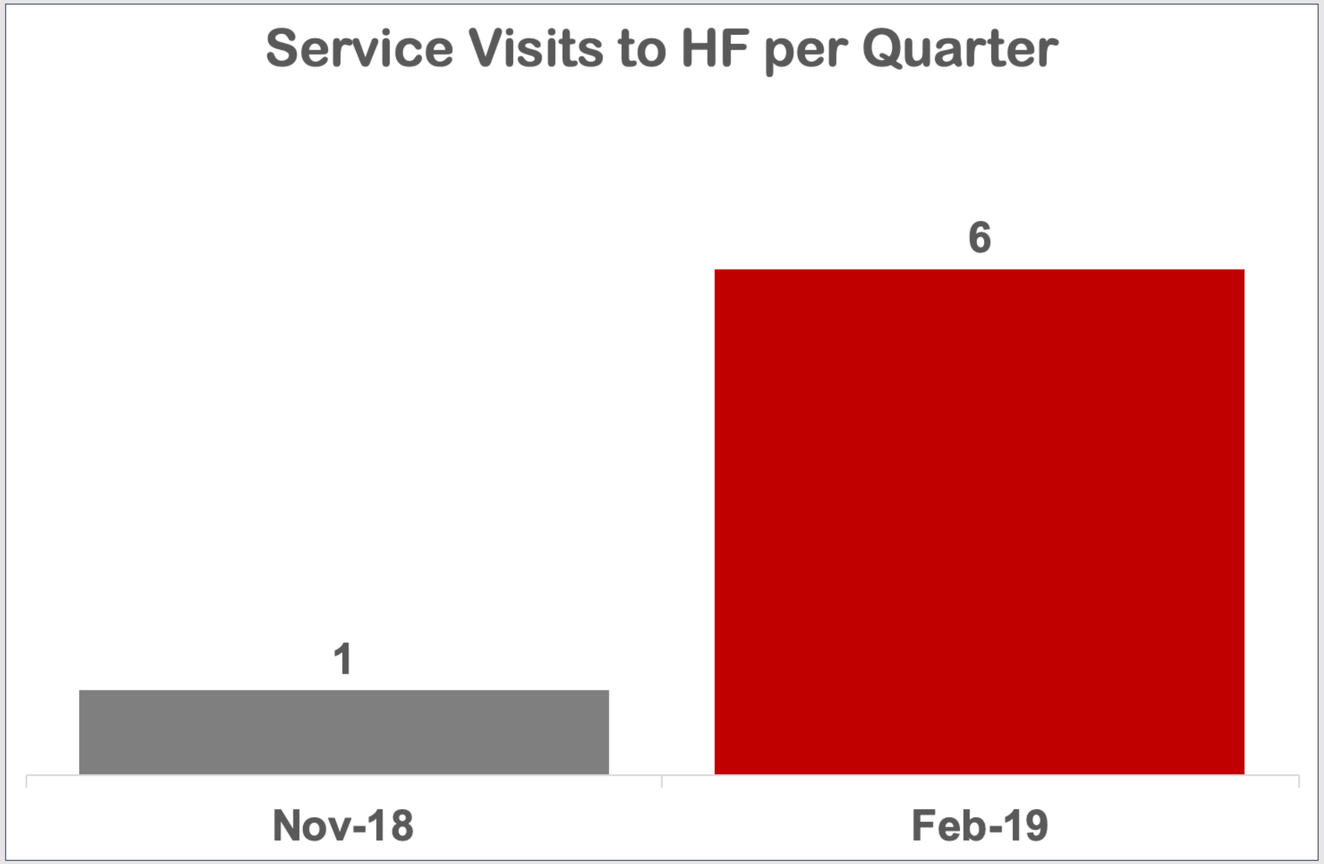
What did PLM do in Liberia?

- Prepared Margibi County Depot with **warehouse storage area reconfigured** to ensure commodities stored by programme in a flow prioritizing high volume commodities enabling **effective and efficient "pick and pack"** of requisition orders each day
- The 51 facilities that were verified and segmented were organized in to a **daily route over 20 days** (4 weeks of 5 working days) to support **consistent and reliable service delivery**
- County Supply Chain Co-Ordinator was **trained** in the Service Technician role and **provided with the necessary tools to effectively perform the role** (rental motorbike, fuel and oil, LMIS forms, calculator)
- A County **delivery driver** on probation was **allocated to the pilot with a rental 4x4 vehicle and fuel provided to deliver all requisition orders** raised by the Service Technician the **next working day**
- **Supervisor** worked with the Service Technician **each day to train and monitor performance** versus plan
- **Storage areas at the facilities were reorganized** based on MoH quality guidelines and **LMIS routines completed for accuracy** and future time efficiencies on next visit (yellow Stock Record Card, County Requisition Order Form) with **training and monitoring of quality standards** and LMIS reporting done with the Officer-in-Charge
- Each **commodity was reviewed for expiry and damages, then counted** and the inventory flows recorded on the LMIS forms, leading to calculation of the optimum requisition order by commodity stocked using 1.5x months offtake as the optimum maximum inventory level which was then agreed with the Officer-in-Charge
- On **delivering the order the next day direct to the storage area**, the Delivery Driver assisted the Officer-in-Charge to count the issued inventory, matching it to the requisition order made the day before, then **reloaded the shelves using "FEFO" principles whilst updating the LMIS routines** (Stock Record Card, signed Delivery Note)
- On return to the County Depot, all **data was uploaded on to the Margibi M&E database** for analysis and forecasting with 143,500 data points analysed per month



Liberia Supply Chain Redesign

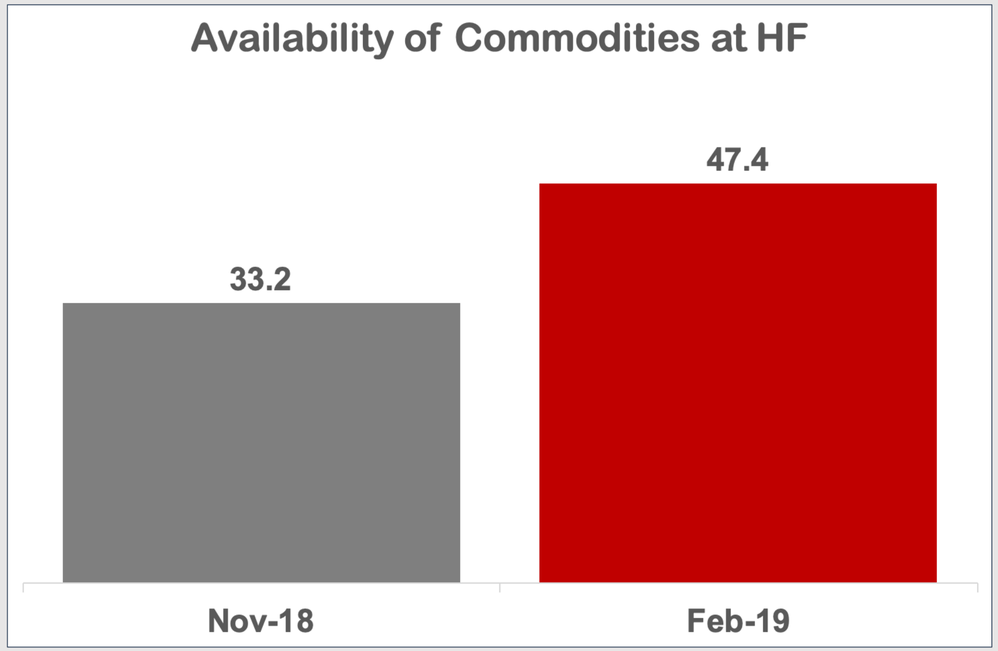
Service to the last mile improved with monthly visits to facility, and more frequent delivery of commodities.

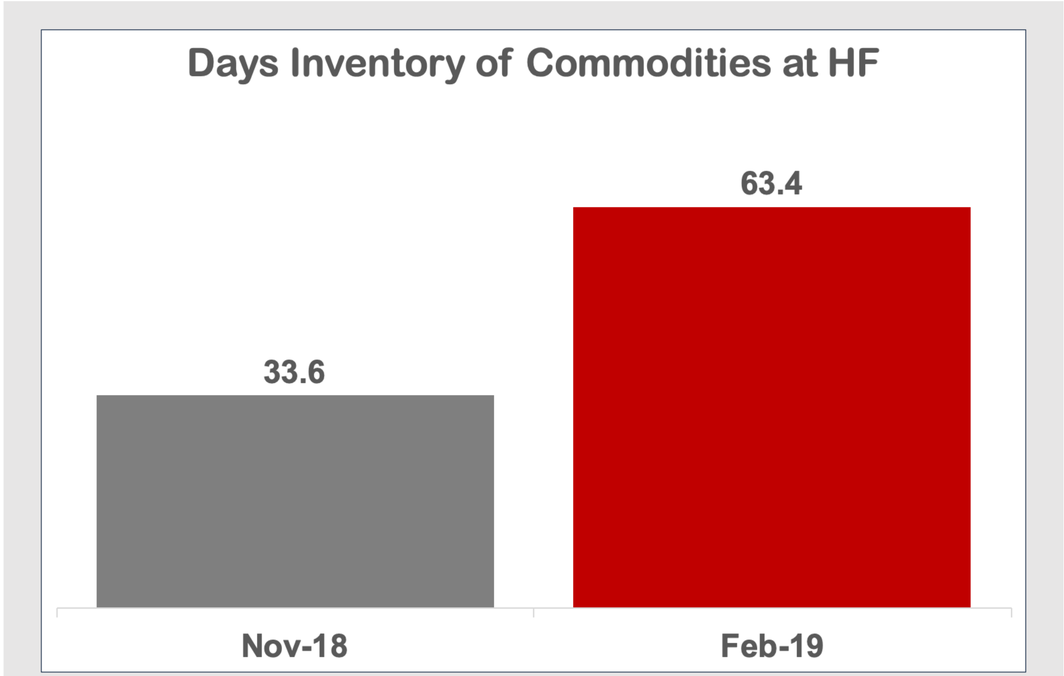


- Monthly visit by Service Technician and Delivery Truck increased service visits by 500%
- Deliveries made to 51 facilities over 3 months:
  - 1,984 commodities averaging 13 per delivery
  - 63,192 packs averaging 413 per delivery

Liberia Supply Chain Redesign

Average availability of medicines improved by end of 3 months, with greater inventory held at HFs *despite* the model commencing after quarterly distribution to the HFs in October 2018 with no further replenishment of commodities at County Depot in the 3-month period





- Availability of number of commodities increased by 14.2 per HF (+43%)
- Achieved through monitoring of low stocks and redistribution of over-stocked commodities

- Average days inventory held at HF increased by 29.8 days (+89%)
- At 33 days in November OOS would incur 2 months before next delivery but in February there is a safety buffer of 33 days

Liberia Supply Chain Redesign

Summary of learnings in Liberia

Data Visibility

- There is **clear line of sight of off-take** at the Health Facility across all the commodities stocked for the CMS, enabling the optimum quantum of inventory to be held to **prevent out-of-stocks and overstocks** leading to expired products and inefficient allocation of commodities

Accurate Forecasting and Demand Planning

- Where commodities are **running low or are out-of-stock** (OOS) on the service visit, the **correct quantum of commodities can be delivered the next working day** to ensure reduction in the level of out-of-stocks over the coming service cycle thus limiting the duration of non-availability of commodities to patients
- The service frequency was **increased from quarterly to monthly** for the Health Facilities, enabling more accurate and timely recording of the inventory held at each Health Facility, whilst **enabling quicker responses to adverse low-inventory situations** from County Depot
- **Quantification, and therefore procurement, is more accurate** given that deployment of commodities is balanced across the Health Facilities and offtake is more accurately monitored

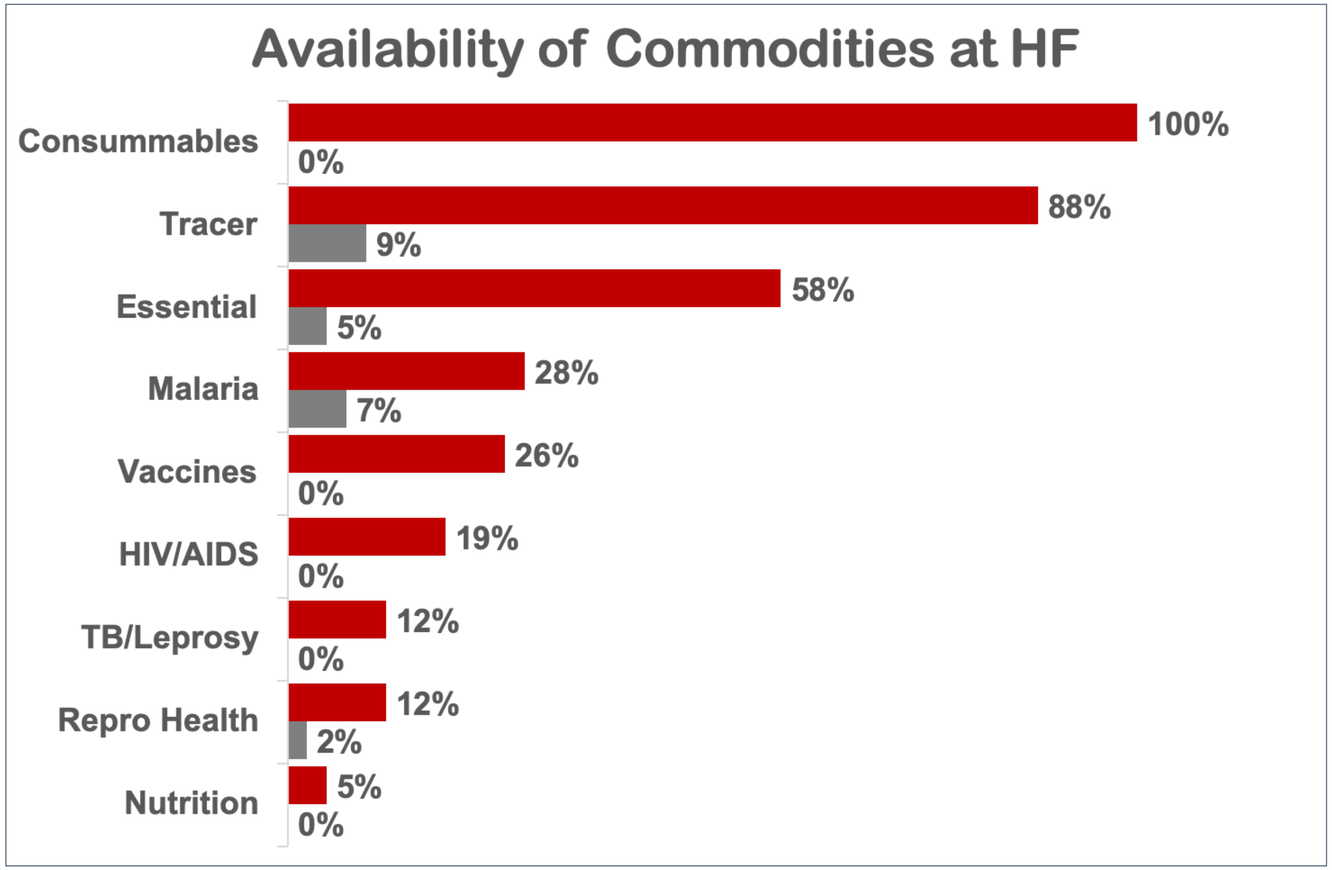
Improved Expectations and Coordination at the Front Lines

- Because the **service visit is done on a fixed planned route, the Health Facilities know when there will be a visit and can be prepared**. Hence, the availability of the clinic staff to assist in the monitoring of inventory flow improved significantly, along with access to the storage areas and LMIS routines. Because delivery of the order occurs on the next working day, this has also ensured that clinic staff are ready to receive the order at the agreed upon time
- **LMIS routines have improved** in health facilities in their consistency and accuracy as the training and coaching on the regular monthly visits begins to take effect. This improves accountability to the last mile.

Liberia Supply Chain Redesign

PLM have applied the principles of Liberia to a similar Last Mile Delivery Model implementation in Sierra Leone and the results reinforce the effectiveness and success of the approach with Out-of-Stocks reduced from 92% to 1%

- TCCC RouteSell model adopted for Makeni area
- 2-weekly visit by Service Technician on Delivery Truck
- Dedicated vehicle and staff working on preplanned fixed route for consistent service
- Deliveries made to 43 facilities over 16 weeks from December 2018 to April 2019



Liberia Supply Chain Redesign

Key messages from Liberia

- **Understanding and management of inventory flows** at Health Facility is critical in determining offtake of Essential Medicines and ensure effectiveness of Supply Chain
- **Dedicated vehicles and staff working on a preplanned fixed route cycle** are essential for consistency of service and understanding of inventory flows at Health Facilities
- **High service frequency is critical initially** to ensure accuracy of offtake data but as understanding of offtake is improved service frequency can be reduced for efficiency
- “One size fits all” service model is inappropriate with a **segmented service approach more effective** for the variety of Health Facilities to be serviced
- **Prioritise data collection through LMIS routines** to ensure effective inventory deployment at County level before investing in high-cost delivery fleet
- **Clear responsibilities and objectives required for staff** supported by skills development, performance management routines and appropriate compensation models

Project Last Mile

Thank you

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