



**Improving Access to Vaccines in Mozambique**  
*Achieving long-term robust supply chain performance  
through accountability and incentives*

Brittany Johnson

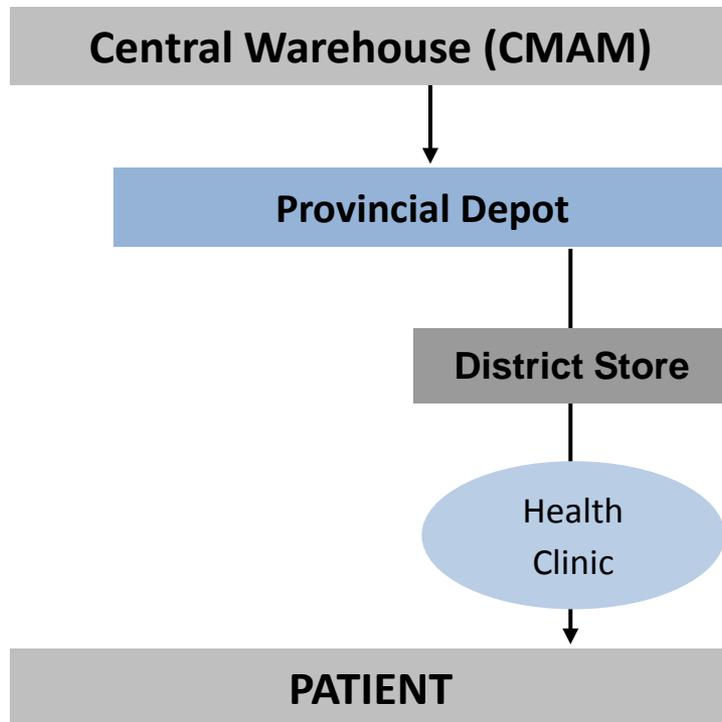
Dakar, Senegal  
11 November 2015



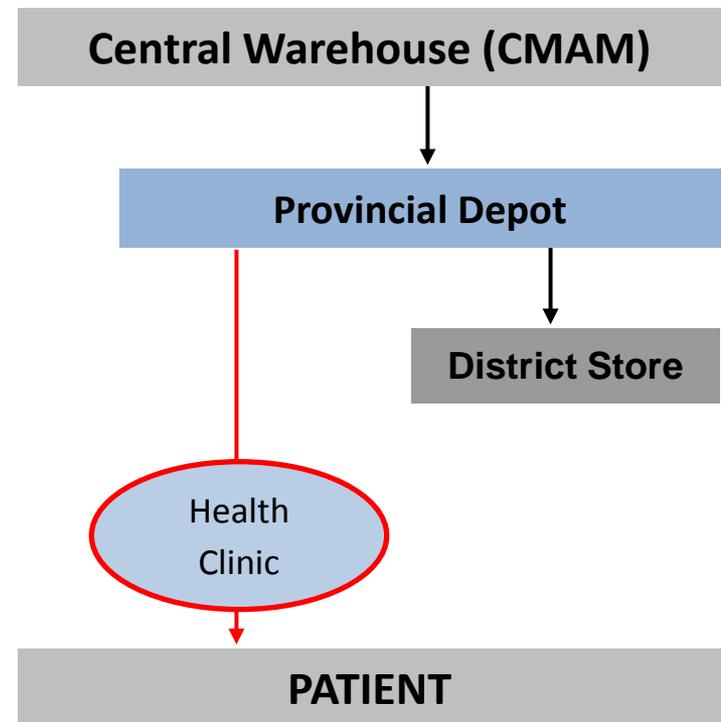
# Direct Logistics System (DLS) Successes

VillageReach implemented successful program to improve vaccine availability by improving data and responsiveness of provincial distribution teams in 4 provinces

## Essential Medicine Supply Chain



## DLS Supply Chain





# Theory of Change

To move away from partner support, need autonomy in addressing issues that impede distribution



Problem	Intervention	Expected Outcome
<ul style="list-style-type: none"><li>• Distribution teams often feel that challenges are out of their control to address</li><li>• Government needs approach to manage team and provide support currently available through VillageReach</li></ul>	<ul style="list-style-type: none"><li>• Implement sales and operations style meeting between distribution teams and EPI managers</li><li>• Incentivize and reward EPI teams for outstanding performance</li></ul>	<ul style="list-style-type: none"><li>• Promote team's autonomy in solving challenges</li><li>• Increase government focus and awareness</li></ul>

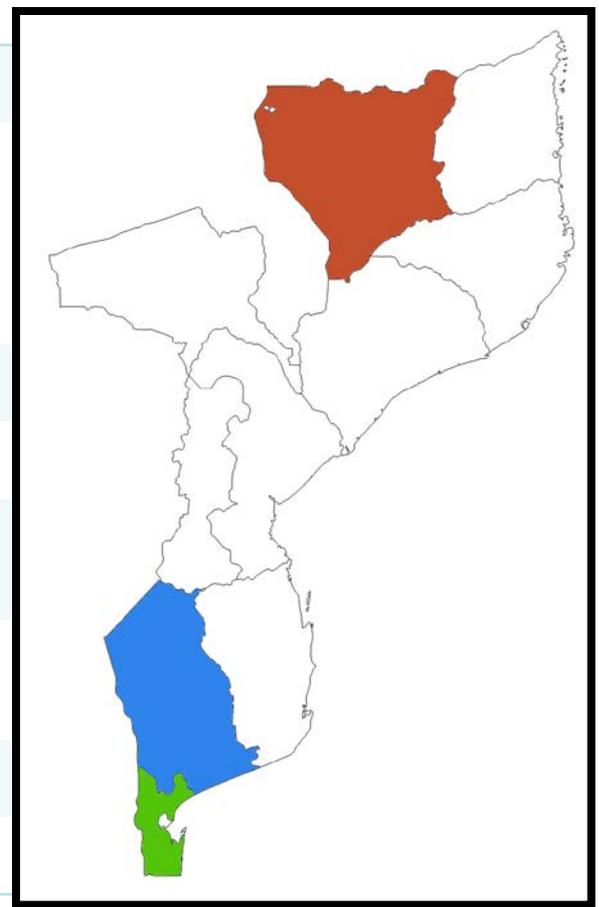


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# Study Design

To define a strategy, need to determine what tools are affective and viable as a solution

	Gaza	Maputo	Niassa
Study status	Intervention	Intervention	Control
Eligibility	Easy access for training and follow-up	Easy access for training and follow-up	Too distant for study; No field officer before October 2014
Facilities	97	82	129
Districts	12	8	16
Length of distribution run	2 weeks	2 weeks	2 weeks
Total field coordinators	2	2	4
Total cars	2	2	3
SELV	July 2014	July 2014	July 2014





# Two Interventions:

Two interventions using established best practices in supply chain management

## Intervention 1: Implement Performance Management Tools

- Field team to routinely document challenges
- Officers to discuss these challenges with DPS; senior management at monthly meetings to define problem as well as potential corrective measures

### 1. Distribution Issues Chart

Use to identify high-level challenges

Fill-out over the course of the month

### 2. Resolution Report

Use to discuss root causes to the challenges identified over the month

Fill-out and use as a guide at monthly meetings

## Intervention 2: Recognize Top Performers

- \$4,000 USD will be awarded to province showing greatest performance improvement over baseline
- DPS is free to determine how it should be spent
- Senior leadership of MISAU will personally congratulate top performing province
- Recognition at ceremony for all participating provinces at National Meeting



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# Intervention 1

Samples of distribution issues chart & resolution report

GAZA						
MONTH:		B. Health Units Not Visited				
District	Facility Name	1. Refrigerator at health unit was not working	2. No vehicle was available	3. No fuel was available	4. No per diem was available	5. Other
Bilene	Chissano, Bilene					
	Incaia, Bilene					
	Licilo, Bilene					
	Macia, Bilene					
	Mamonho, Bilene					
	Mangol, Bilene					
	Mazivila, Bilene					
	Messano, Bilene					
	Olombe, Bilene					
	Praia, Bilene					
	Tuane, Bilene					

**C. Health Units with 1 or more Stock-out Events**

Discuss and fill out the following form for each root cause counted in the previous form.

Review facilities in each 'root cause' column with and respond to the following questions based on each root cause identified.

Name of Health Units:	
Date:	

C1 Among the health units that did not report a stock out, why didn't they report? Please include actions being taken to resolve this.

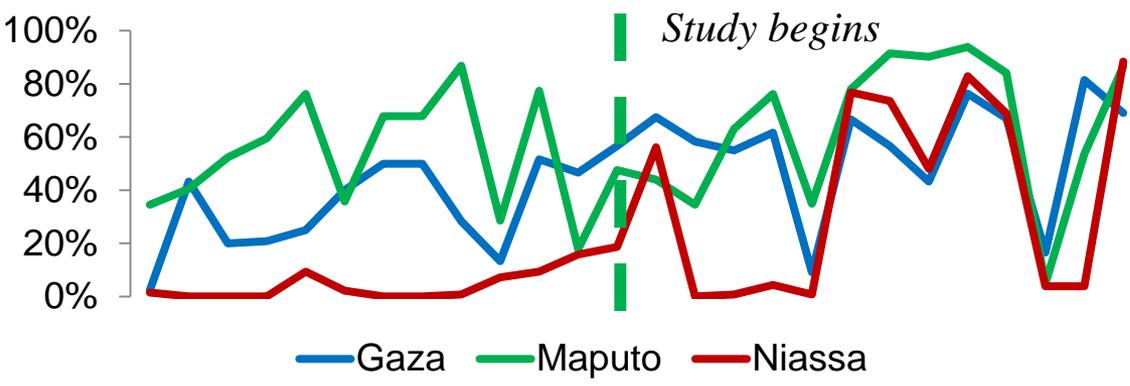



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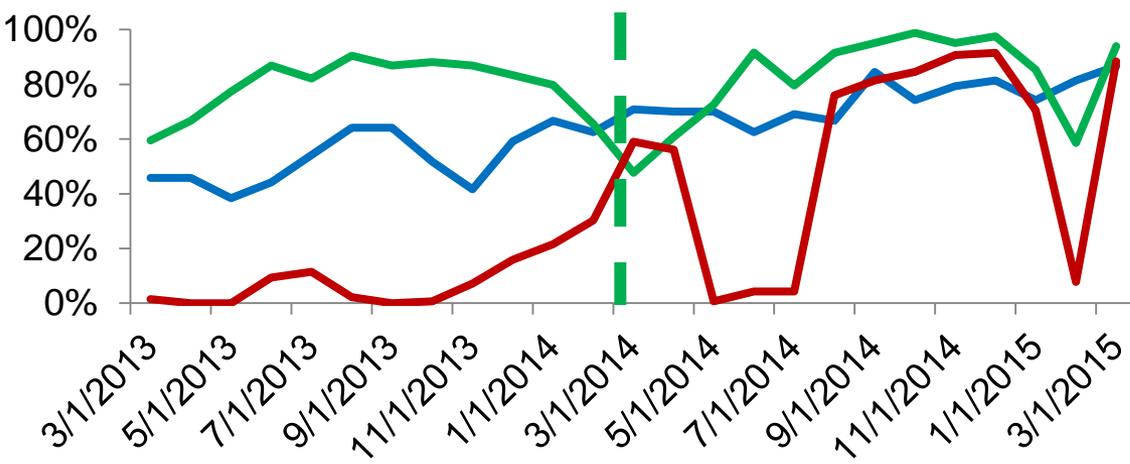
# Performance data for health units visited

No significant increase in performance: Control analysis: P Value = 0.25;  
Decrease in variance for Gaza & Maputo (0.06 & 0.08) ;  
Interviews suggested behaviors changed

## Visits < 33 days



## Visits < 66 days



### Changes at health units

The distribution team made changes within the health units that resolved missed deliveries. For example, the issue of lack of staff at certain health units in Maputo were attributed to the lack of discipline of workers who left without informing their supervisors. Based on complaints by the distribution team and supervisory staff, these workers were transferred.

DLS shows improvement starting in June 2014 which resulted in **75 additional children vaccinated.**

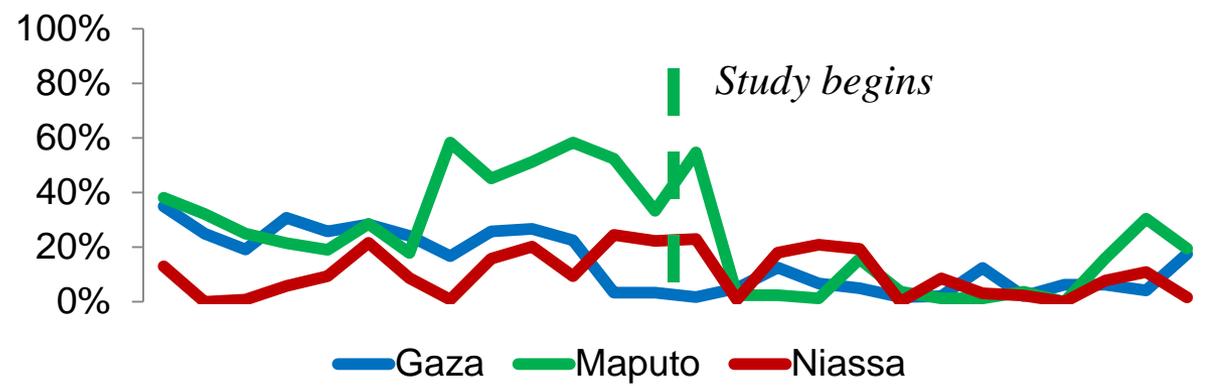


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# Performance data stock out at health units

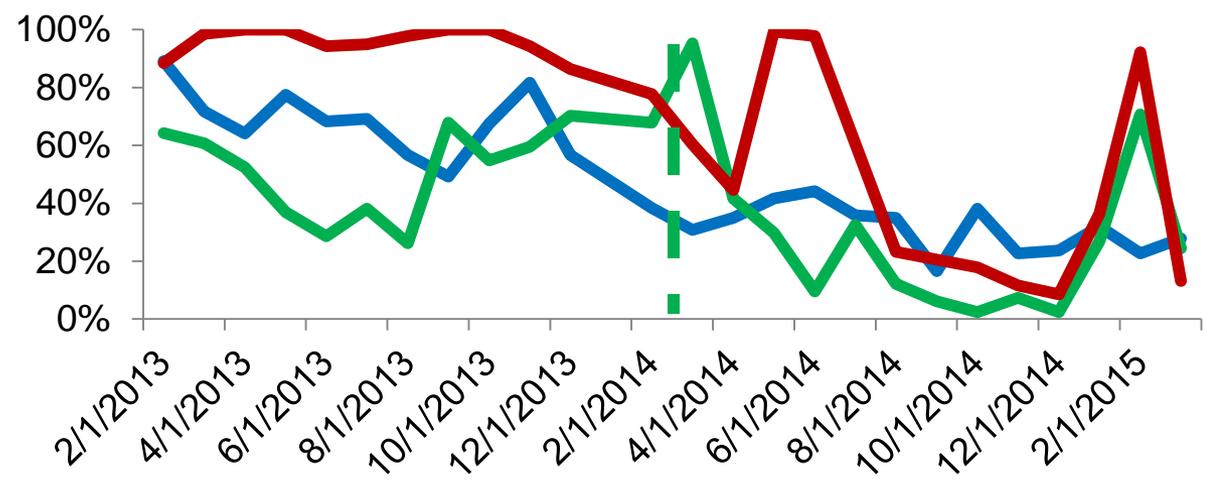
Significant reduction in health unit stockouts: Pre post analysis: Gaza (P value = 0.00), Maputo (P value = 0.00), Niassa (P value = 0.09)

## Percentage of measured stockouts



**Training health unit staff in quantification**  
The distribution team trained the health unit staff in determining vaccine need and following policies such as FIFO in order to avoid vaccine expiration and/or stockouts.

## Percentage of probable stockouts





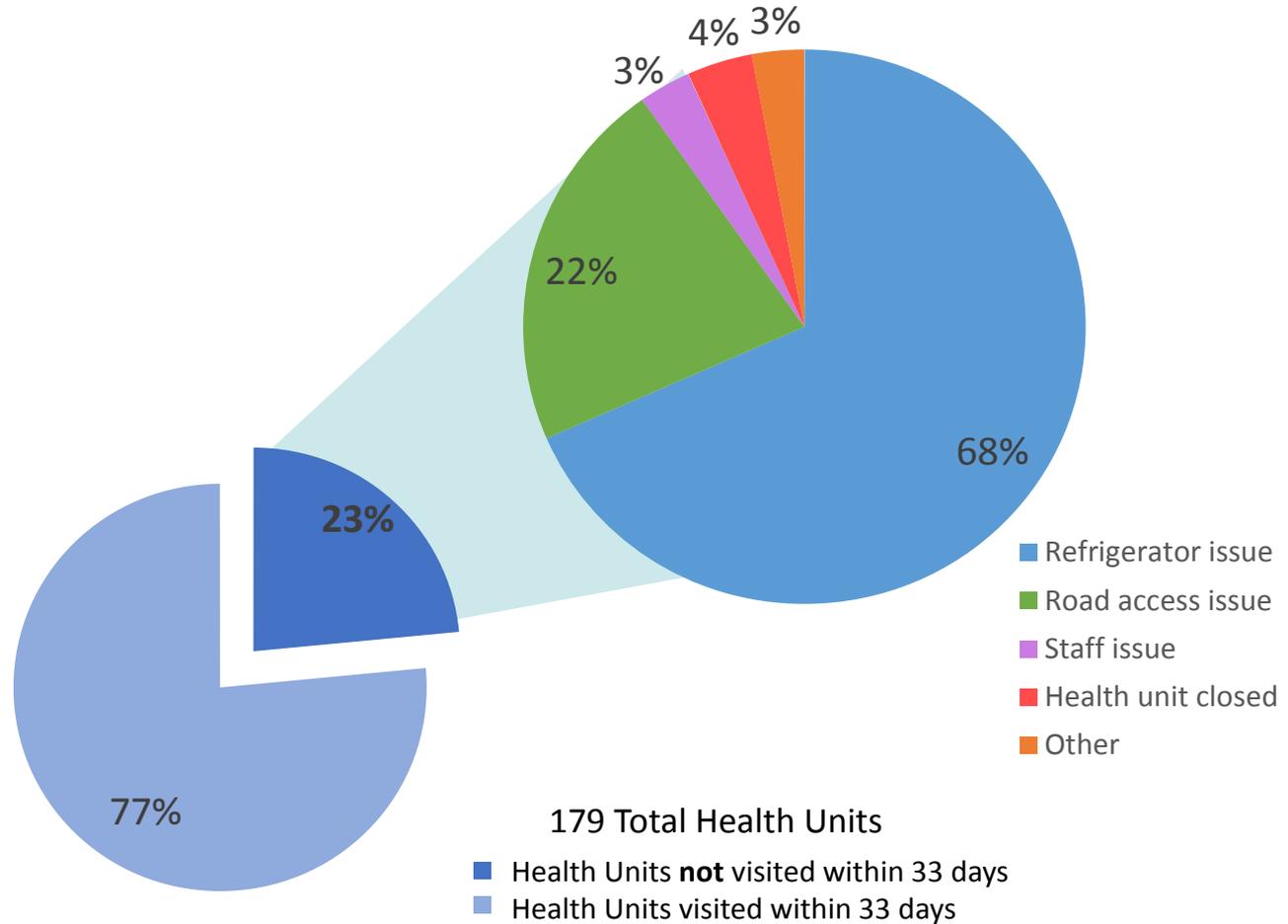
# Primary cause of missed deliveries: broken refrigerators

20% more deliveries feasible with working refrigerators

Potential to identify primary bottlenecks for optimal resource allocation

## *Sensitizing authorities*

Problems with refrigerators prompted the field coordinators to mention the same to the provincial chief, who wrote a letter to MISAU requesting assistance to replace various non-functioning refrigerators. Engaging the provincial staff in distribution work has also created awareness amongst them of challenges faced at the ground level by field staff.





# Study Results

Statistical results showed marginal improvement. Interviews suggested that performance tools kept distribution team performance high

Application	Perception
Qualitative	
<p>Distribution teams gathering data on the reason behind</p> <ul style="list-style-type: none"> <li>• Reports not available</li> <li>• A facility not visited</li> <li>• A stockout occurrence</li> </ul> <p>Regular post-distribution meetings occur in Gaza and Maputo</p>	<p>Endline interviews:</p> <ul style="list-style-type: none"> <li>• Improved planning next distribution cycle</li> <li>• <b>Financial incentive less a driver than accountability</b></li> <li>• Increased ability to address issues encountered at province, district and health unit levels.</li> </ul>
Quantitative	
<ul style="list-style-type: none"> <li>• Marginal impact to distribution performance; possible aspect of sample</li> <li>• Niassa showed clear improvement with introduction of data review &amp; field officer</li> </ul>	<ul style="list-style-type: none"> <li>• Regular root cause analysis to determine most pressing issues, such as refrigerator availability limiting 20% of deliveries</li> <li>• Results suggest an increase in vaccine availability</li> </ul>

## *Medical Chiefs' Observations*

“They use a predefined agenda at meetings. We discuss some solutions and register these in a document. For instance, when mobile brigades wasn’t carried out due to fuel, coordinators requested district to reach out to NGOs, like WorldVision.”

- Gaza Province

“We have the meeting notes from VillageReach and the reports help evaluate change between past and present; Field Coordinators are obliged to do a report after distribution.”

- Maputo Province



# Concluding thoughts

Findings from implementation of **distribution issues chart & resolution report** by distribution teams suggest government will need to increase distribution team management

	Performance Tools (Intervention 1)	Incentive (Intervention 2)
Role	Distribution team defines and resolves issues identified during delivery	Distribution team awarded for performance
Impact to VillageReach	Distribution team resolves issues as they arise VillageReach and other interested parties have a root cause analysis of distribution bottlenecks	Award provided was less a motivator than VillageReach oversight of performance and payment of distribution services
Resources	One 2 hour meeting per month	USD 4,000 dedicated to computers

- Resolution of refrigerator problem can have a high impact
- Tools are easy to reproduce and could help MISAU sustain the performance achieved by VillageReach
- Handover to MISAU would require identifying key staff member to take the lead





Based on study, *Improving Access to Vaccines in Mozambique: Achieving long-term robust supply chain performance through accountability and incentives*

Brittany Johnson, Ekta Jhaveri, Prashant Yadav, Wendy Prosser

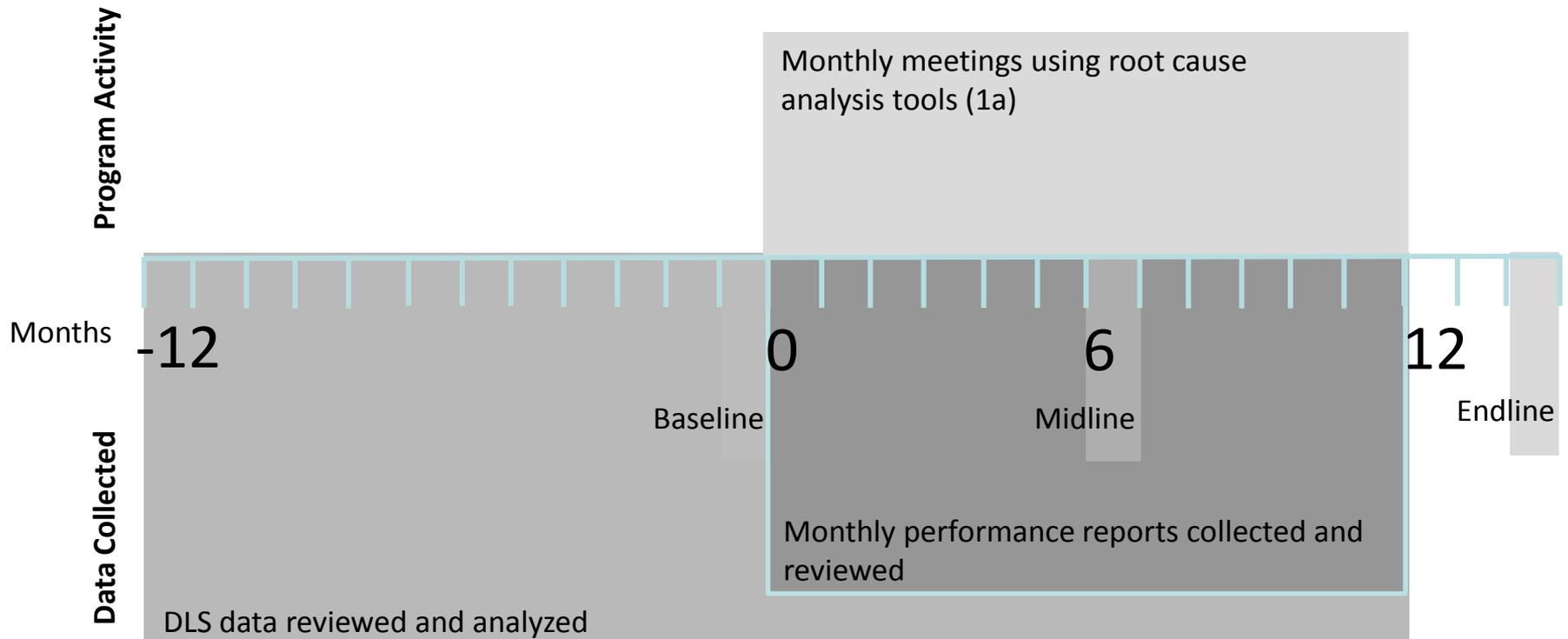
Thank you Aida Coehlo, VillageReach Supply Chain Lead in Mozambique



WILLIAM DAVIDSON INSTITUTE  
AT THE UNIVERSITY OF MICHIGAN



# Timeline





# Performance Management Framework

**Objective:** Investigate the effect of accountability and incentives on vaccine supply chain performance by monitoring 3 key targets:

- A. Submission of government reports on coverage and use from health facilities
- B. Distribution of vaccines to all health units within 33 days
- C. Stockout occurrences

**Partners:** Government of Mozambique (MOH), DPS, Village Reach, and the William Davidson Institute

**Participating Provinces:** Gaza and Maputo, Niassa as control

Problem

Intervention

Outcome



# Performance Tools in Action

Expected versus actual performance of distribution teams

Key challenge	Distribution team's scope of action	Steps taken	Result
<b>Refrigerator</b>	<p>Report to district</p> <p>Local technician part of distribution team</p> <p>Drop-off stock of vaccines at the district</p> <p>Advise on energy purchase procedure</p>	<p>Reported to districts for replacement of refrigerators, batteries and other parts</p> <p>Took technicians during visits to support local technicians and perform minor maintenance work</p> <p>Requested an accountability system to purchase Credelac energy to prevent wastage from electricity outage</p>	<p>Maputo province received 26 new refrigerators</p> <p>Impact is second hand. Distribution team did not have direct control over refrigerator and energy purchases.</p>
<b>Vehicle</b>	<p>Request 10 days in advance</p> <p>Send vehicle for maintenance towards close of distribution cycle</p>	<p>The distribution team complied procedures requesting for vehicles 10 days in advance and sending for maintenance after distribution took place.</p>	<p>Endline impression was that these requests were made in a more timely manner once monthly resolution reports were required by VillageReach</p>
<b>Fuel</b>	<p>Request 10 days in advance</p>	<p>The distribution team complied with procedures requesting for fuel 10 days in advance</p>	<p>Gaza team reached out to partners and district in situations of acute fuel shortages and resolved the issue, principally with the assistance of VillageReach</p>
<b>Per diem</b>	<p>Request 10 days in advance</p>	<p>The distribution team complied with procedures requesting for per diem 10 days in advance</p>	<p>Endline impression was that these requests were made in a more timely manner once monthly resolution reports were required by VillageReach</p>