Gavi Full Country Evaluations

2015 Annual Dissemination Report

Mozambique Report

Acknowledgments

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Evaluation Team

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Acronyms

BMGF	Bill & Melinda Gates Foundation
CIDA	Canadian International Development Agency
DAF	Department of Administration and Finance
DAH	Development Assistance for Health
DPC	Directorate of Planning and Cooperation
DPT	Diphtheria, pertussis, tetanus
DSS	Demographic Surveillance System
EPI	Expanded Program on Immunization
EVM	Effective Vaccine Management
FCE	Full Country Evaluations
FDC	Foundation for Community
FGD	Focus group discussion
FMA	Financial management assessment
FMR	Financial management requirements
GAMR	Grant Application, Monitoring and Review
GBS	General budget support
GPEI	Global Polio Eradication Initiative
HAI	Health Alliance International
HMIS	Health management information system
HSS	Health System Strengthening
ICC	Interagency Coordinating Committee
IDRC	Infectious Diseases Research Collaboration
IEC	Information, Education, and Communication
IHME	Institute for Health Metrics and Evaluation
IPD	Invasive pneumococcal disease
IPV	Inactivated polio vaccine
ISS	Immunization Support Services
JA	Joint Appraisal
KII	Key informant interview
M&E	Monitoring and Evaluation
MOF	Ministry of Finance
MOH	Ministry of Health
MSD	Measles second dose
MVI	Multiple New Vaccine Introduction
NGO	Non-governmental organization
NIP	National Immunization Program
NITAG	National Immunization Technical Advisory Group
NUVI	New and Underutilized Vaccine Initiatives
NVI	New vaccine introductions
NVS	New Vaccine Support
PATH	Program for Appropriate Technology in Health
PCV	Pneumococcal conjugate vaccine
PEF	Partner Engagement Framework

PIE	Post-introduction evaluation
RV	Rotavirus vaccine
SCM	Senior Country Manager
TA	Technical assistance
TOC	Theory of change
TOT	Training of trainer
TWG	Technical Working Group
UEM	University of Eduardo Mondlane
UNZA	University of Zambia
UW	University of Washington
VIG	Vaccine Introduction Grant
VTs	Vaccine Serotypes

Introduction

The Gavi Full Country Evaluations (FCE) is a prospective study covering the period 2013-2016 with the aim to understand and quantify the barriers to and drivers of immunization program improvement, with emphasis on the contribution of Gavi, the Vaccine Alliance in four countries: Bangladesh, Mozambique, Uganda, and Zambia. This third annual dissemination report complements previous reports by providing key findings and recommendations for the 2015 evaluation period in the four FCE countries. The FCE encompasses all phases of Gavi support, from decisions to apply, application and approval, preparation, and implementation in each of the relevant streams of support. Table 1 summarizes the scope of the evaluation during the 2015 period. In addition to evaluating the various streams of support active in each of the FCE countries, we have in parallel also included findings related to cross-stream processes, most notably, the Joint Appraisal (JA) and Partner Engagement Framework (PEF).

Table 1: Overview of streams evaluated in each country

	Bangladesh	Uganda	Mozambique	Zambia
Health System Strengthening (HSS) [1]	Conclusion of HSS-1 grant and application for HSS-2	Implementation of HSS-1	Implementation of HSS-2	Application for HSS-2
Human papillomavirus (HPV) vaccine	Preparation for demonstration project	Preparation for national introduction	Year two of demonstration project	Post-demonstration project[2]
Inactivated polio vaccine (IPV)	Preparation, launch, and post-introduction	Preparation for introduction	Preparation for introduction	Preparations for introduction
Measles-rubella vaccine (MR)	Post-introduction			Application
Measles second dose (MSD)			Preparation for introduction	Post-introduction
Meningitis A vaccine		Application		
Rotavirus vaccine (RV)		Application	Preparation for introduction and launch	Post-introduction
Pneumococcal conjugate vaccine (PCV)	Preparation, launch, and post-introduction	Post-introduction	Post-introduction	Post-introduction

[1] HSS-1 and HSS-2 refer to phases of HSS support. HSS grants provided prior to 2012 are referred to as first generation, or HSS-1. Grants provided after 2012 are referred to as the second generation of HSS grants, or HSS-2.

[2] The Zambia demonstration project was not Gavi-supported.

Methods

Evaluation components relevant to this Mozambique report include:

- Process tracking based on document review, observation, and fact-checking interviews.
- Root cause analysis to identify underlying causes of identified challenges and factors of success.
- In-depth analysis of the process using key informant interviews (KIIs) and social network analysis (SNA).
- A resource tracking studies to generate estimates of the national-level resource envelope on immunization.
- Analysis of Health Management Information Systems (HMIS) to understand the rollout of new vaccine introductions.
- Analysis of secondary data to generate small-area estimates of vaccine coverage and child mortality at subnational levels (Annex 6).
- Causal analysis of small-area estimates of vaccine coverage and child mortality at subnational levels to estimate the relationship between new vaccine introductions and child mortality (Annex 5).
- Pneumococcal conjugate vaccine (PCV) effectiveness studies, including pre- and post-introduction nasopharyngeal carriage suveys and pre- and post-analyses of surveillance data on invasive pneumococcal disease and X-ray-confirmed pneumonia.

Summary of Mozambique findings

New vaccine introductions (NVI)

1. The three planned vaccines (rotavirus vaccine, inactivated polio vaccine, and measles second dose) were successfully introduced in 2015.

Pneumococcal conjugate vaccine (PCV)

1. PCV has largely been routinized into the immunization system in Mozambique with the number of doses of PCV delivered stabilizing at the same level as existing vaccines. There are geographic inequities in coverage, reflecting existing system bottlenecks.
2. Preliminary findings from vaccine effectiveness studies, including nasopharyngeal carriage surveys pre- and post-PCV introduction in Nampula, Maputo, and Manhiça and surveillance of invasive pneumococcal disease and X-ray-confirmed pneumonia, suggest that the scale-up of PCV is reducing pneumococcal disease burden in Mozambique.

Human papillomavirus (HPV) vaccine

1. The HPV vaccine demonstration project was successful in meeting the Gavi-demonstrated ability criteria of 50% coverage in the Gavi-supported Manhiça district. The Gavi-supported HPV demonstration project was leveraged to provide in-kind training & Information, Education, and Communication (IEC) support to the two Ministry of Health-led demonstration sites which tested similar delivery modalities. Coverage of HPV vaccine in these two districts, however, was notably lower due to challenges with demand generation and community mobilization,

providing important lessons for national introduction. These lessons would otherwise have not been learned without the government of Mozambique funding the two additional demonstration sites.

2. Year one evaluation products to inform National Immunization Program (NIP) and partners about the coverage, acceptability, and financial sustainability of the HPV vaccine delivery model tested in the demonstration project were not available in time for the year one review due to unrealistic timelines set by Gavi, as well as limitations in technical assistance (TA) and capacity. As a result, there was a missed opportunity to refine or test an alternative delivery model in year two. This is particularly pertinent given present concerns regarding the programmatic and financial feasibility of the tested delivery model for national introduction.

3. The consensus amongst stakeholders is that national rollout of HPV should move forward in a stepwise fashion using school-based, facility-based, and community-based campaign delivery modalities and that accompanying implementation research should be conducted to capture and disseminate key lessons learned across a range of contexts.

Health System Strengthening (HSS)

1. There was continued delay in HSS implementation with limited initiation of planned programmatic activities. Preparatory activities are ongoing at MOH and procurement under responsibility of UNICEF is taking place.

Cross-stream

2. The financial management processes are complex, involving numerous steps and actors beyond the realm of the NIP; therefore, planning for new vaccine introductions needs to take this into consideration.

3. The cumulative effect of NVI and the need for new competencies in order to manage cash grants has stretched the financial and programmatic management capacity of the immunization system.

4. The Joint Appraisal (JA) process resulted in the identification of a comprehensive set of technical assistance (TA) needs; however, the process was resource-intensive and may be improved through better clarification of roles and responsibilities across key stakeholders.

5. Senior Country Manager (SCM) turnover at the Gavi Secretariat impacted negatively on communication with Mozambique and contributed to suboptimal implementation of Gavi products before the arrival of the new SCM in Q2 of 2015.

6. Mozambique remains heavily reliant on external financing of its immunization program. Although Mozambique has met its co-financing requirements, the introduction of multiple new vaccines raises questions about the ability of the country to continue to financially sustain delivery and meet its co-financing obligations.

Summary of recommendations

For each cross-country and country-specific finding described above, we developed related recommendation(s). Table 2 summarizes the recommendations for the cross-country findings. In the table, we noted the intended audience for the recommendation as well as the FCE team's assessment of generalizability based on other studies and information at hand. For brevity, we have not included the country-specific recommendations in this table, but include them at the end of each of the country-specific sections.

Table 2: Findings and recommendations

Finding	Recommendations
New vaccine introductions (NVI)	
Finding 1: The three planned vaccines (RV, IPV, and MSD) were successfully introduced in 2015.	1. Introducing multiple new vaccines simultaneously and into the existing supply chain has the potential to maximize limited resources in resource-poor settings. 2. Supply of vaccines to countries should be taken into account when planning joint vaccine launches, in order to ensure continuity of introductions.
Pneumococcal conjugate vaccine	
Finding 1: PCV has largely been routinized into the immunization system in Mozambique with the number of doses of PCV delivered stabilizing at the same level as existing vaccines. There are geographic inequities in coverage, reflecting existing system bottlenecks.	1. Further evaluation should explore the drivers of regional inequities as they relate to how PCV is currently being implemented.
Finding 2: Preliminary findings from vaccine effectiveness studies, including nasopharyngeal carriage surveys pre- and post-PCV introduction in Nampula, Maputo, and Manhiça and surveillance of invasive pneumococcal disease and X-ray-confirmed pneumonia, suggest that the scale-up of PCV is reducing pneumococcal disease burden in Mozambique.	
Human papillomavirus (HPV) vaccine	

Finding 1: The HPV vaccine demonstration project was successful in meeting the Gavi-demonstrated ability criteria of 50% coverage in the Gavi-supported Manhiça district. The Gavi-supported HPV demonstration project was leveraged to provide in-kind training & IEC support to the two MOH-led demonstration sites which tested similar delivery modalities. Coverage of HPV vaccine in these two districts, however, was notably lower due to challenges with demand generation and community mobilization, providing important lessons for national introduction. These lessons would otherwise have not been learned without the government of Mozambique funding the two additional demonstration sites.	1. Future stepped implementation of HPV nationally should be implemented in order to facilitate real-time monitoring and evaluation of contextual effectiveness.
Finding 2: Year one evaluation products to inform NIP and partners about the coverage, acceptability and financial sustainability of the HPV vaccine delivery model tested in the demonstration project were not available in time for the year one review due to unrealistic timelines set by Gavi as well as limitations in technical assistance and capacity. As a result, there was a missed opportunity to refine or test an alternative delivery model in year two. This is particularly pertinent given present concerns regarding the programmatic and financial feasibility of the tested delivery model for national introduction.	1. Gavi messaging on the importance of testing alternate delivery models needs to translate into contracts with demonstration site implementers (CISM). 2. Deadline for year one reports need to be met during demo projects to ensure necessary modality adaptations are made in a timely manner.
Finding 3: The consensus amongst stakeholders is that national rollout of HPV should move forward in a stepwise fashion using school-based, facility-based, and community-based campaign delivery modalities and that accompanying implementation research should be conducted to capture and disseminate key lessons learned across a range of contexts.	1. The government of Mozambique, together with stakeholders, should develop and submit a proposal to introduce HPV nationally through three modalities, which will be communicated through nationally organized media mobilization campaigns via radio, TV, and newspapers. a. Health facilities: general availability of HPV provided through SAAJ (Friends of Adolescents and Youth Services) services. b. School: periodic school-based campaigns for girls, initiating with a year one catch-up for girls 10-13 years and subsequent 10-year-old immunization target group. Also

	allow for non-school attending girls access at schools. c. Community: periodic outreach campaigns in low school attendance areas, and supported with involvement of community leaders.
Health System Strengthening (HSS)	
Finding 1: There was continued delay in HSS implementation with limited initiation of planned programmatic activities. Preparatory activities are ongoing at MOH and procurement under responsibility of UNICEF is taking place.	1. Technical assistance (TA) for financial management should be considered because programmatic management has already been boosted. Financial management may be weakened by this added workload and is a risk for the performance of the grant. 2. Understanding the drivers of immunization coverage improvements in Mozambique will help to guide future health system strengthening efforts.
Cross-stream	
Finding 1: The financial management processes are complex, involving numerous steps and actors beyond the realm of the NIP; therefore, planning for NVI needs to take this into consideration.	
Finding 2: The cumulative effect of NVI and the need for new competencies in order to manage cash grants has stretched the financial and programmatic management capacity of the immunization system.	
Finding 3: The JA process resulted in the identification of a comprehensive set of technical assistance needs; however, the process was resource-intensive and may be improved through better clarification of roles and responsibilities across key stakeholders.	
Finding 4: Senior Country Manager (SCM) turnover at the Gavi Secretariat impacted negatively on communication with Mozambique and contributed to suboptimal implementation	1. Future introductions and activity plans need to include the time it takes Gavi funds to be accessible in order to avoid a situation of planned activities not taking place because funds are at the treasury but are not accessible

of Gavi products before the arrival of the new SCM in Q2 of 2015.	for utilization by MOH, creating a perception of delay. 2. Weak financial management is a risk for Gavi funds and especially for HSS. TA for this should be considered by Gavi to ensure that funds are appropriately allocated and managed at the central and subnational levels. The TA needs to be seconded into the MOH Department of Administration and Finance (DAF) and/or in the Directorate of Public Health to support the financial management teams in these departments and work closely with the newly appointed HSS focal person in the NIP. 3. Financial management requirements (FMR) for strengthening accounting staff in the DAF should be implemented. 4. Listing roles and responsibilities in one accessible document prior to the JA process would help facilitate communication and subsequent joint work efforts of stakeholders. 5. Gavi should be more explicit to the country and partners on their roles in JA and PEF, specifically clarifying how resources are meant to be allocated between Gavi Secretariat members (UNICEF and WHO) and other immunization stakeholders (MOH, VillageReach, USAID, US Centers for Disease Control and Prevention [CDC], Foundation for Community Development [FDC], etc.). 6. Any TA identified to support the implementation of Gavi products should be preferably country-based. 7. Mozambique expressed desire that Gavi TA should build capacity. Gavi, together with the government of Mozambique should consider an indicator to measure this, while clarifying what type(s) of capacity are to be prioritized. 8. SCMs should be professionally proficient in the country's official language which has been addressed with the present appointment. 9. Gavi should minimize high turnover of SCMs and have in place mitigation strategies in the event of turnover.
Finding 5: Mozambique remains heavily reliant on external financing of its immunization program. The introduction of multiple new vaccines raises questions about the ability of the	

country to financially sustain delivery and to meet its co-financing obligations.	

Contents

Summary of Gavi support

The Mozambique Expanded Program on Immunization (EPI) was launched in 1979 under the Primary Health Care Program. Over the past 15 years, Gavi has disbursed a total of US$135 million to Mozambique to support vaccination efforts through the EPI.

Gavi support in Mozambique began in 2001 with Immunization Support Services (ISS) furthering New Vaccine Support (NVS) disbursements preceding the introduction of tetra-diphtheria, pertussis, and tetanus (DPT)-hep B. This support has been available through the ISS grant, though this stream of funding ended in 2012. Most recently, Gavi supported the introduction of PCV in 2013 and is currently supporting the HPV demonstration project in Manhiça, which entered its second year of implementation in 2015. Cash support for HSS was approved for 2014-2018, with disbursement of funds shifted to 2015. Rotavirus vaccine (RV), measles second dose (MSD) vaccine, and inactivated polio vaccine (IPV) vaccine were also launched in 2015 with support from Gavi.

Table 3: Overview of Gavi support in Mozambique

Gavi support	Period of funding	Total amount of funding (US$)
Immunization services support (ISS)	2001-2003, 2011	1,665,500
Injection safety support (INS)	2003-2005	835,881
Tetra DPT-Hep B (NVS)	2001-2007	16,897,320
Pentavalent vaccine (NVS)	2009-2015	41,472,562
Pneumococcal conjugate vaccine (NVS)	2013-2016	49,436,092
HPV demo (NVS)	2014-2015	98,503
Health System Strengthening (HSS)	2014-2018	25,041,767
Rotavirus vaccine (NVS)	2015-2018	2,817,500
Measles second dose (NVS)	2015-2018	668,000
Inactivated polio vaccine (NVS)	2015-2018	3,320,500

Methods overview

Consistent with the prospective nature of the FCE, the evaluation reflects Gavi-supported activities via assessment of implementation and related milestones by support stream. Table 4 provides an overview of the methods and data sources used and the topics assessed through these methods.

Table 4: Evaluation methods

Methods	Source consulted/study area	Topics investigated
Process tracking	– Documents reviewed included multiple vaccine (RV, MSD, and IPV) applications and guidelines, Mozambique decision letters, multiple New and Underutilized Vaccine Initiatives (NUVI) (RV, MSD, and IPV), introduction plan and budget, NUVI social mobilization and information, education and communication materials, financial management assessment (FMA) and HSS FMR, HSS year one and procurement plans, HSS Monitoring and Evaluation (M&E) framework, Mozambique Unique Treasury Account (CUT-ME) circular, HPV awareness and acceptability study, preliminary HPV post-introduction evaluation (PIE) and program implementation reports, preliminary 2015 Effective Vaccine Management (EVM) report, 2014 APR, JA guiding documents, JA presentations and other in-country preparation documents, JA report, Mozambique and Gavi partnership framework, MOH draft TA guidelines, Gavi PEF and Grant Application, Monitoring and Review (GAMR) documents. – Meetings and events attended: 41 events including 20 NIP TWGs meetings, eight IEC subgroup meetings, one national new vaccine Training of Trainers (TOT),	- Information was collected based on relevant theory of change (TOC) milestones for multiple NUVIs, RV, IPV, MSD, HPV, and HSS, as well as Gavi priority questions for JA, TA, GAMR, and PEF.

one EVM training, one EVM field trip, one IEC training for community leaders, four JA-related NIP meetings plus a workshop, HPV demonstration first dose campaign, RV launch, Joint IPV & MSD, one HSS provinces meeting.

- Fact-checking interviews conducted: eight total (four NIP, two UNICEF, two CISM).
- Country-level key informant interviews (KIIs) conducted: 51 total (10 national-level MOH, eight national-level non-governmental organizations, four research institutes, 14 provincial-level MOH in three provincial headquarters, 15 district-level MOH in three districts).
- Global-level KIIs: 23 total (16 Gavi Secretariat, five Alliance partners, two others).
- Partnership study using Social Network Analysis (SNA*) methods. The SNA survey was administered to respondents during national and subnational KIIs. Questions covered whom respondents worked with and exchanged TA with on the following Gavi activities: NVI, HSS, and/or HPV. Strength of relationships were measured by asking respondents to rate their trust and the quality of TA exchanged.

  ** Social network analysis (SNA) is a social science research method that measures the composition and structure of relationships. In the FCE, we use network analysis to*

	understand in-country immunization partnerships; specifically, to show who is involved in NIP activities, and how those individuals are connected through their relationships. In 2015 we surveyed NIP staff and partners about their "working together," "information sharing," and "TA relationships" for vaccine introduction activities, HPV demonstration implementation, and HSS planning for implementation.	
Resource tracking	– Administered survey questionnaires for quantitative and qualitative data to the MOH NIP, six national-level NGOs including UNICEF, WHO, USAID, Village Reach, FDC, and GlaxoSmithKline (GSK) and two research institutes (INS and CISM). Additionally interviewed the medical head and financial and NIP program managers from these provinces and three districts (nine informants).	
Household survey	– IMASIDA data (pending receipt of data in 2016).	
Analysis of administrative data	– Reviewed all administrative data from NIP and from MOH health management information system (HMIS) (*Modulo Basico*).	
Small area analysis	– Compiled and analyzed all available household survey and census data sources.	– Estimation of national, divisional, district, and sub-district vaccine coverage and under-5 mortality.
Inequality analysis	– Compiled and analyzed all available survey data sources with	– Estimation of vaccine coverage differences by wealth quintile and sex.

information on household wealth
and vaccination coverage.

Findings

- The FCE compiled and systematically analyzed relevant data to estimate country performance along key indicators at the national and, when possible, the subnational level (Table 5, Table 6, Table *7*).

Table 5: Country characteristics of Mozambique

Characteristic	
Demographic and economic indicators	
Total population (2015)	27,977,808
Birth cohort (2013)	1,087,008
GDP per capita (2015)*	US$1,015.47
Health spending and development assistance for health (DAH)**	
Government health expenditure as source (GHE-S)	US$151.7M
DAH, channeled through government (DAH-G)	US$258.2M
DAH, channeled through non-government entities (DAH-NG)	US$332.7M
Total DAH	US$590.9M

*GDP per capita source: IHME covariates database, reported in 2005 international dollars
**Health expenditure is explained in terms of GHE-S, DAH-G, and DAH-NG. GHE-S + DAH-G gives the total government health expenditure, GHE-S + Total DAH gives total spending on health in the country. Health expenditure estimates 2014; Gavi disbursements are total disbursements by calendar year, 2001–2012. Unit is in 2014 USD.

Table 6: Vaccine coverage estimates in Mozambique

Vaccine coverage	Most recent survey estimate*	WUENIC 2014 revision**	Self-reported coverage (WHO)***
DPT/Penta3 coverage	76.2%	78%	88%
DPT1-DPT3 dropout rate	15.1%	15%	5%
BCG coverage	91.1%	93%	94%
Polio3 coverage	73.2%	78%	88%
Measles coverage	81.5%	85%	85%
Percent fully vaccinated****	64.1%	N/A	N/A

* Most recent survey coverage estimates from 2011 DHS
** WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) 2014[10]
***WHO vaccine-preventable diseases monitoring system, 2014 global summary[10]
**** BCG, measles, and three doses each of DPT and polio vaccine (excluding polio vaccine given at birth)

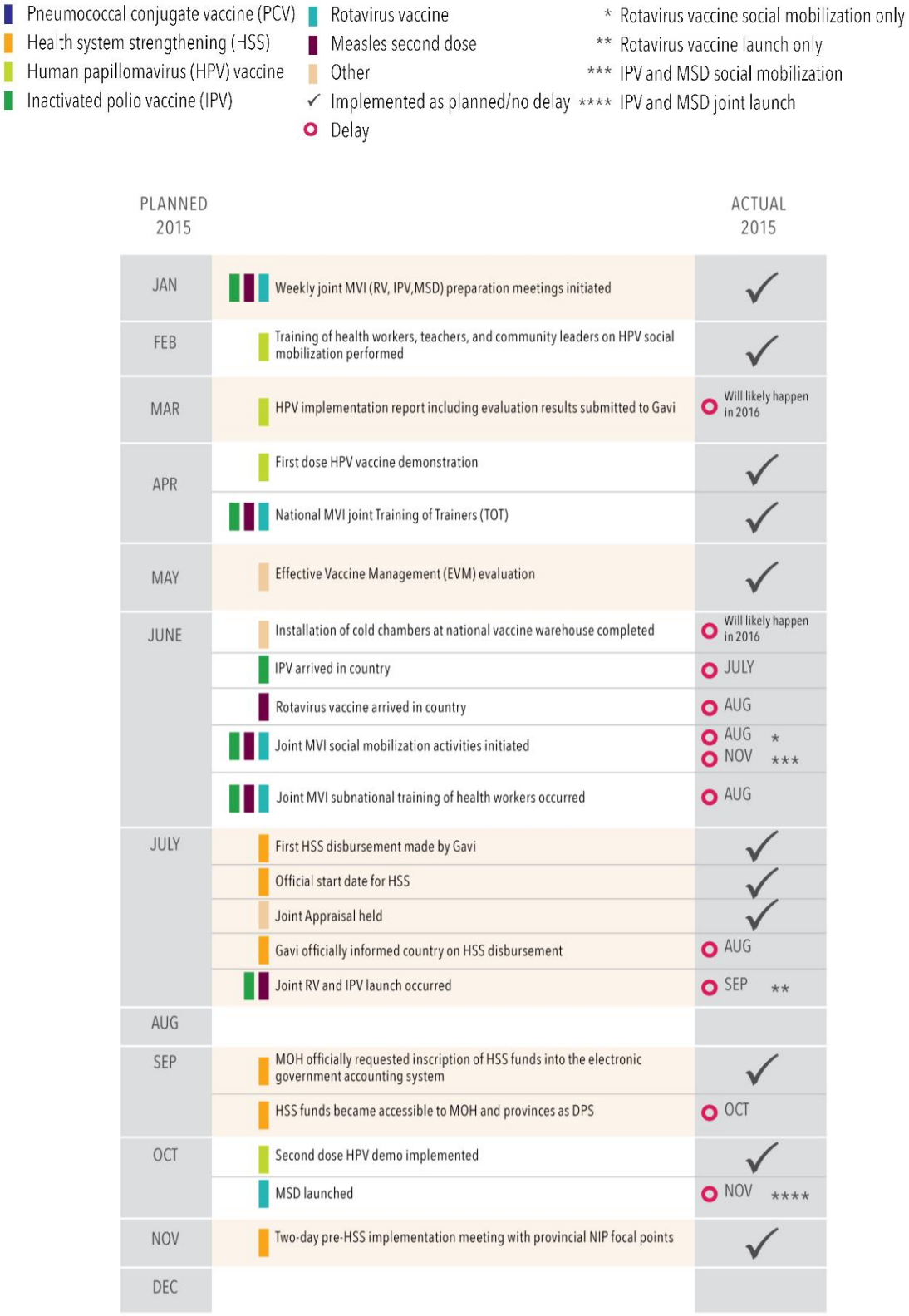
Table 7: Child, adult, and vaccine-preventable disease mortality in Mozambique

Child, adult, and vaccine-preventable disease mortality	GBD 2013*
All-cause mortality (deaths per 1,000)	Estimate (uncertainty interval)
Infant mortality (${}_1q_0$)	60.1 (50.2, 70.2)
Under-5 mortality (${}_5q_0$)	88.4 (76.9, 101.5)
Female adult mortality (${}_{45}q_{15}$)	367.2 (344.8, 390.9)
Male adult mortality (${}_{45}q_{15}$)	454.3 (423.8, 486.0)
Cause-specific mortality: children under 5 (deaths per 100,000)	
Measles	18.2 (4.4-53.5
Diphtheria	0.5 (0.00-2.9)
Tetanus	6.1 (3.4-10.8)
Pertussis	11.4 (0.0-60.0)
Meningococcal infection	5.0 (2.8-8.1)
Diarrheal disease	107.5 (60.9-175.0)
Lower respiratory infections	198.9 (134.3-273.7)
Cause-specific mortality: all ages (deaths per 100,000)	
Cervix uteri cancer	3.3 (2.5-4.5)
Acute hepatitis B	0.6 (0.4-0.8)
Cirrhosis of the liver secondary to hepatitis B	2.5 (1.6-3.6)
Liver cancer secondary to hepatitis B	0.8 (0.5-1.1)

* Mortality based on Global Burden of Disease (GBD) 2013 estimates

Timeline of major immunization events

Figure 1: Timeline of major immunization events in Mozambique



Multiple New Vaccine Introduction (MVI): rotavirus vaccine, inactivated polio vaccine, and measles second dose

The first application to Gavi to support the introduction of rotavirus vaccine (RV) in Mozambique was submitted in August 2012. This initial proposal was not approved due to a number of missing elements, including the Minister's and Interagency Coordinating Committee (ICC) signatures, an introduction plan, and a cold chain capacity expansion plan. The proposal was resubmitted in September 2013 and accepted in 2014. The September 2013 application was updated to include a proposal to introduce measles second dose (MSD). Combining RV and MSD introductions was seen as a way of maximizing the limited resources in-country for execution of NVI preparation activities (see below). Through a joint introduction, a repetition of the same NVI activities in sequential years would be avoided. The cold chain capacity plan was developed after the NIP Technical Working Group (TWG) analyzed scenarios for cold chain needs for introduction of either Rotarix or Rotateq. This exercise demonstrated that introducing Rotateq would require doubling the cold chain capacity in the provinces from 260 m^3 to 520 m^3.

> *…when we thought about the simultaneous introduction of the vaccines, we also thought about the issue of maximizing available resources, because we realized that when we do simultaneous introduction of vaccines we are able …This is because for each introduction it is necessary to give training. It is necessary to prepare the whole issue of logistics. That is, many activities precede the introduction [of the vaccine]. Thus, we think that the most ideal way would be to do simultaneous introduction so that we can sparingly use available resources.* (MOH KII)

> *…the simultaneous introduction…it would be more efficient if done this way instead of being done in isolation and it is for this reason that we took this approach.* (Partner KII)

Over the same time period, Global Polio Eradication Initiative (GPEI) countries were highly encouraged by Gavi and partners to apply for IPV grants with the co-financing requirement waived. Mozambique prioritized this commitment to the GPEI and an application was developed and submitted in August 2014.

An introduction plan for all three vaccines to be launched in 2015 was developed and submitted to Gavi in August 2014 (jointly with the IPV proposal). This plan proposed a joint launch of RV and IPV in July 2015 and a stand-alone MSD launch in October 2015. Preparations for the introduction of the three vaccines began in earnest in Q1 2015. Activities included updating the existing NVI training curriculum; training health personnel at the national and subnational levels; developing, piloting, and implementing social mobilization messages, tools, and materials; expanding cold chain capacity; implementing an EVM evaluation as per existing plans; updating and printing of paper M&E tools and the electronic HMIS vaccination module; and procuring and disbursing vaccines through the responsible entities UNICEF and GSK.

The rotavirus vaccine was officially launched on September 4, 2015, although without IPV. This launch received high visibility in the country as it was presided over by the President of the Republic. There were numerous newspaper articles about the new vaccine and media interviews with high-ranking officials. IPV and MSD were launched nationwide jointly on November 27, 2015. Given these events the country is at stage "J" of the FCE NVI TOC. The details of progress within key TOC milestones is in Annex 20.

Finding 1

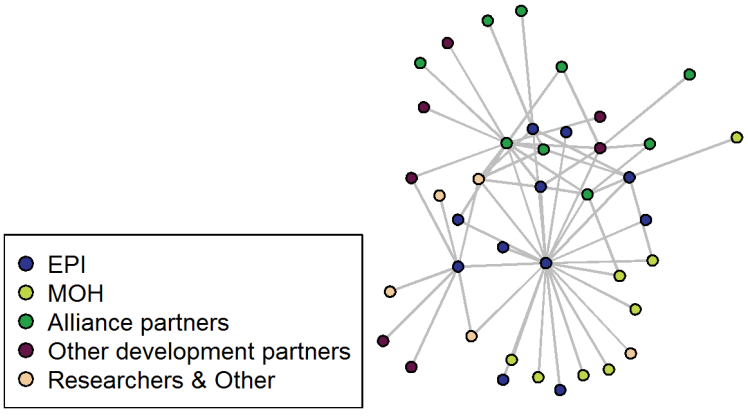
The three planned vaccines (RV, IPV, and MSD) were successfully introduced in 2015.

Throughout the first eight months of the year, joint preparatory activities were carried out including trainings, social mobilization, updating of all NIP tools, EVM evaluation, cold chain capacity expansion, and disbursement of vaccines to the country to successfully launch three vaccines in 2015. The FCE observed that the introduction of the three new vaccines in 2015 largely adhered to the scheduled plan, with a slight delay on the actual launch dates. During JA meetings and KIIs, NIP stakeholders attributed this success to experience and lessons learned from previous vaccine introductions, namely pentavalent in 2009 and PCV in 2013, as well as high political will and commitment. Furthermore, the 2014 FCE and JA reports described how the PIEs from these two previous introductions provided useful information for the planning technical team. Another success was the inclusion of broadly experienced NIP MVI technical working group members, 83% of whom had participated in either the pentavalent or PCV introduction, and 61% in both.

> *…for example we didn't repeat the same error because of what we learnt during the PCV introduction*. (MOH KII)

The FCE team surveyed NIP staff and partners to identify (1) who was involved in each of the program's activities in 2015, (2) who worked together, and (3) who exchanged TA with whom (see SNA methods on Page 8 for description). The planning and launch network (Figure 2) show that the network is composed of individuals from many types of organizations, reflecting the role of NIP staff and partners in new vaccine introductions (each circle indicates an individual named through the survey). However, despite many individuals being involved in new vaccine introductions, the NIP management (dark blue circles) are the most connected (connections reported during the survey are indicated by the lines between circles). This finding suggests that (1) they exhibit leadership over Mozambique's immunization activities, but (2) they are responsible for managing a high number of relationships across the partnership.

Figure 2: Vaccine introduction network, working together relationships



The main driver for the slight adjustments in the 2015 new vaccine launch dates was the unavailability of RV and IPV vaccines in-country. In addition, delays in completion of the national-level vaccine

warehouse and cold chain expansion, coupled with slight delays in subnational-level joint MVI trainings also contributed to the launch date changes for the three vaccines. Another factor that influenced the setting of new launch dates was the strong political commitment for the Presidential launch of rotavirus in 2015. The first change in date was declared by the NIP in May 2015, when the NIP learned that IPV would not be available in the market on time for a joint launch with RV. Subsequently the country planned for stand-alone launches of RV in July, IPV in September, and MSD in November. The reason for not planning a joint IPV and MSD launch at this point was the differential target age groups and the program preference for separate launch dates. For these reasons, the RV launch was separated from the IPV launch.

> *…it was planned to introduce Rota and IPV at the same time because they shared the same target group, and after, measles second dose later because it is a different target group. This didn't occur because we weren't able to receive the IPV vaccine in a timely manner, as it was not available in the market; now we have to do measles second dose with IPV.* (Partner KII)

One success noted during this preparation period was the timely EVM that began at the end of May and was completed in mid-June, as scheduled.

Joint MVI subnational trainings were planned for mid-July but were postponed due to unavailability of funds. Although the three vaccines' Vaccine Introduction Grants (VIG) had arrived in-country in April, funds were not available in MOH accounts for another three months. Funds from a donor are first deposited in a designated transitory forex account in the Central Bank of Mozambique, which then transfers the money to the unique treasury account (Conta Unica de Tesouro, CUT) in the Ministry of Finance (MOF). Other request processes from the executing entity then follow. When combined, these processes to disburse funds to local ministry accounts typically take up to 12 weeks from the time they are received in the transitory forex account until they are received in local ministry accounts. The cause of this delay differed from that identified during the PCV VIG process, which was attributed to delays in VIG disbursement from Gavi through WHO and UNICEF, meaning funds were not available in the country until the launch week in April 2013. Similar to the situation with PCV in 2013, the joint MVI national TOT for RV-MSD-IPV was conducted using contingency funds from GSK. Unlike PCV, however, where contingency funding from UNICEF and WHO was used for subnational trainings, no contingency funding was available for joint subnational trainings for RV-MSD-IPV. At the end of June 2015, GSK decided to hold back RV disbursement, indicating that subnational training, which was a requirement for the vaccines to be disbursed, had not been completed. GSK had not previously stated this as a condition. However, the situation was resolved quickly through the MOH requesting GSK to disburse the vaccines with the promise that they would not be distributed in-country until after the completion of the trainings. Simultaneously, the MOH was able to access VIG funds in July to carry out this training and other activities.

In July (close to the second planned date for the RV launch of July 30), the RV vaccines were not yet available in-country, and cold chain expansion at the central-level vaccine warehouse had not been completed. The NIP also learned that IPV vaccine would not be available in-country until late September. At this point, the RV launch was postponed to September and the IPV launch to November, which suggested a joint launch with MSD may occur, even though the NIP had earlier tried to avoid a joint IPV and MSD launch for the reasons detailed above. An important factor driving an IPV launch date

prior to the end of 2015 was Mozambique's commitment, as part of GPEI, to introduce one dose of IPV before the end of 2015.

> *…and as you know, countries that are not doing inactivated polio it is required to introduce at least one dose of IPV by December 2015… it is obligatory.* (Partner KII)

A contributing factor to the delays in cold chain expansion completion has been the continued delay in Mozambique accessing HSS grant funding, which includes funding for central-level vaccine warehouse cold chain expansion. The first HSS application was submitted to Gavi in 2009 but was rejected. Mozambique applied twice more, in 2012 and in 2013, before approval was obtained in July of that year. The first disbursement arrived two years later, in July 2015. During this time the country secured contingency funding from USAID to fund this NVI preparation activity, including procurement for cold chain chambers for the central-level vaccine warehouse, which began in early 2014 and was completed in July 2015.

Rotavirus vaccines were disbursed and arrived at the end of July in-country, and were promptly distributed to provinces after completion of the subnational trainings in mid-August. The RV launch was presided over by the President of the Republic of Mozambique on September 4, 2015.

In October, key informants raised concerns about new challenges associated with the forthcoming joint launch of IPV and MSD vaccines. The first concern related to the fact that the two vaccines target different age groups. Experience from the PCV launch and other vaccine campaign activities in Mozambique has shown that there is usually high turnover for vaccinations, and refusal to vaccinate a child because they are not in the right target group has led to negative consequences of population mistrust in the health system.

> *…another big disadvantage is that, for example, now that we will introduce IPV and MSD together is the question of communication, how do you communicate a message for two target groups and be sure that the actual message arrived and was understood?* (MOH KII)

> *…imagine we are speaking to the mother... to pass to the mother one message for two children with different ages, this is complicated in terms of social mobilization and it is more for this reason. Also for the communities, what will happen if you will have a massive avalanche of children up to 18 months but then when they get there you have to say to them "no, you won't receive this vaccine, only this one here will receive this vaccine and you only receive that other vaccine." This is hard for the population to understand, they consider this as an exclusion and when there is discontent and this information gets to others, this could have repercussions beyond what was expected.* (Partner KII)

The second concern is that the three months' time interval between subnational training and the launch date of November 27 is fairly long, and health workers are likely to have forgotten details of the training with consequent quality issues surrounding the initial implementation of the two vaccines.

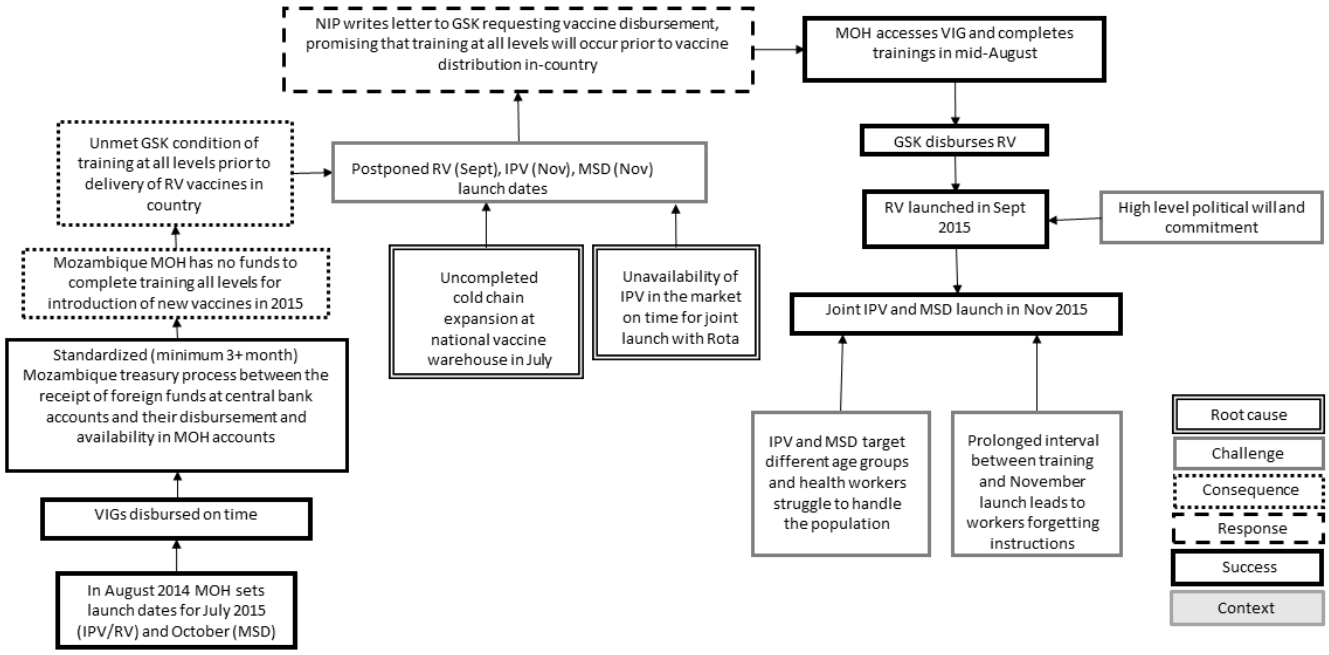
> *…about this… I think we did some of the trainings too early and that the time between the trainings and the actual introduction of the vaccine …what it means is that there is a big risk of those who were trained to forget especially if the vaccines are complex.* (MOH KII)

Beyond these two concerns, there was further concern that with the new vaccines it meant children now had to receive many injections in one visit, which may negatively affect acceptance.

> *....perhaps it brings a little stress to the mother because if we imagine a child will get 3-4 shots in one visit which, in a certain manner, is a problem*. (Partner KII)

These new issues raised during KIIs and the continued routinization of these new vaccines are an important focus for the Gavi FCE in 2016.

Figure 3: Three vaccines were introduced largely as scheduled in 2015, despite a number of factors that hampered preparations, including delays in funding for subnational training and global supplies for IPV



Recommendations

1. Introducing multiple new vaccines simultaneously and into the existing supply chain has the potential to maximize limited resources in resource-poor settings.

2. Supply of vaccines to countries should be taken into account when planning joint vaccine launches, in order to ensure continuity of introductions.

Robustness of finding

Finding 1	Ranking	Robustness criteria
The three planned vaccines (RV, IPV, and MSD) were successfully introduced in 2015.	A	The robustness of findings for the evidence around this conclusion is A, because it is supported by a strong data triangulation from KIIs, review of documents, and participant observation.

Pneumococcal conjugate vaccine

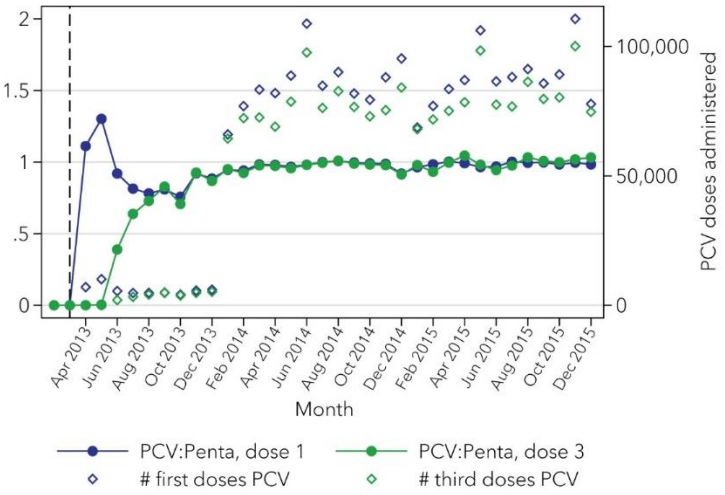
Mozambique introduced the 10-valent pneumococcal conjugate vaccine (PCV) into its routine immunization program in April 2013 with support from Gavi. In the 2014 report we noted that based on HMIS data, the scale-up of PCV coverage in Mozambique was largely smooth, with delivery of PCV approaching that of existing vaccines in the system, i.e., the pentavalent vaccine. In 2015, we have continued to monitor the delivery of PCV. We also report on preliminary findings from the vaccine effectiveness studies conducted by FCE team members CISM.

Finding 1

PCV has largely been routinized into the immunization system in Mozambique with the number of doses of PCV delivered stabilizing at the same level as existing vaccines. There are geographic inequities in coverage, reflecting existing system bottlenecks.

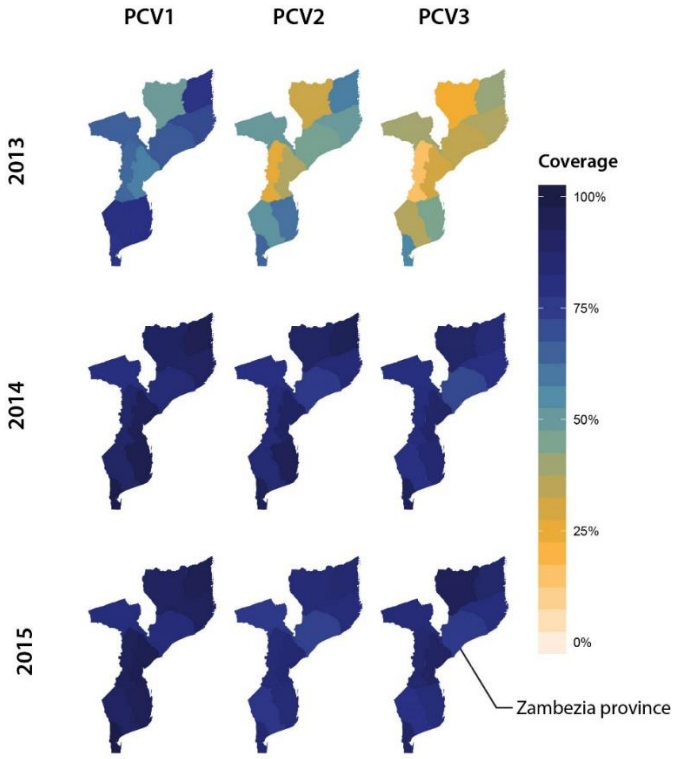
As shown in Figure 4, PCV has largely been routinized into the immunization system in Mozambique, with the ratio of PCV doses to pentavalent doses having stabilized at a ratio of one for approximately two years.

Figure 4: Ratio of PCV to pentavalent doses reported as delivered from HMIS in Mozambique



To estimate the coverage of PCV, i.e., the fraction of the target population receiving one, two, or three doses of PCV, we have combined the small-area estimates of pentavalent coverage based on household surveys with the ratio of PCV to pentavalent doses delivered from the HMIS. These results are presented in Figure 5. These findings highlight that although PCV is well routinized into the system, geographic inequalities in PCV coverage persist due to existing system bottlenecks. Zambezia province has notably lower PCV coverage than other provinces in the country.

Figure 5: Estimated coverage of PCV by dose by province in Mozambique



Recommendation

1. Further evaluation should explore the drivers of regional inequities as they relate to how PCV is currently being implemented.

Robustness of finding

Finding 1	Ranking	Robustness criteria
PCV has largely been routinized into the immunization system in Mozambique with the number of doses of PCV delivered stabilizing at the same level as existing vaccines. There are geographic inequities in coverage, reflecting existing system bottlenecks.	B	Data are based on a combination of HMIS and survey data. The robustness of this finding will be improved once the results from Mozambique's IMASIDA survey are completed.

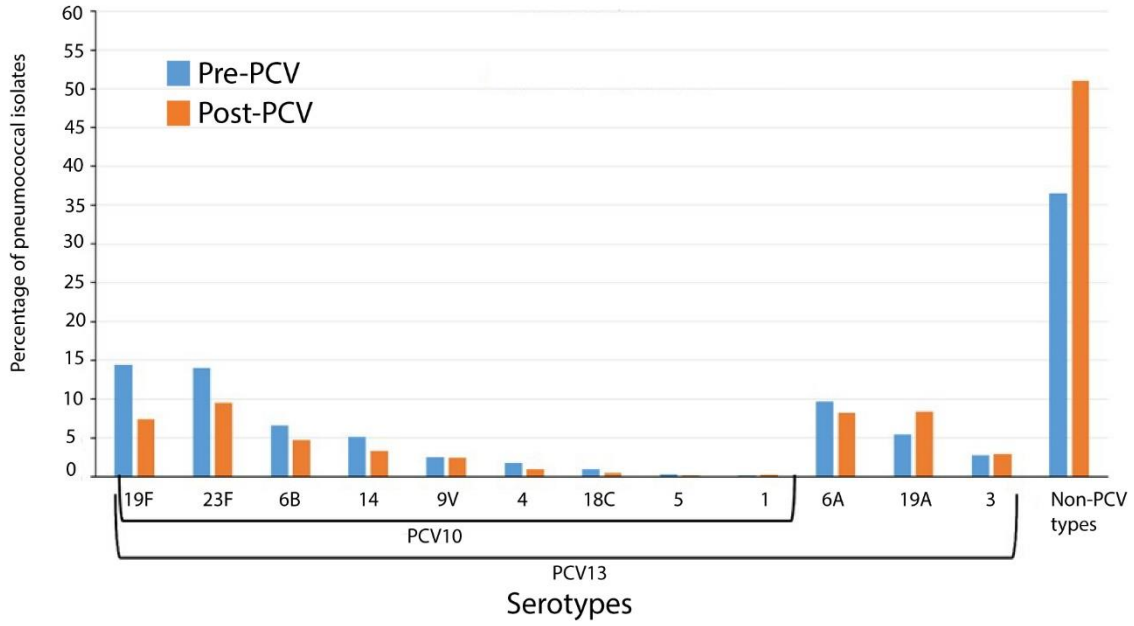
Finding 2

Preliminary findings from vaccine effectiveness studies, including nasopharyngeal carriage surveys pre- and post-PCV introduction in Nampula, Maputo, and Manhiça and surveillance of invasive pneumococcal disease and X-ray-confirmed pneumonia, suggest that the scale-up of PCV is reducing pneumococcal disease burden in Mozambique.

As part of the Gavi FCE, CISM with support from other partners (USAID and CDC) is undertaking a series of PCV effectiveness studies. The first study aims to estimate the direct and indirect effect of PCV10 introduction on pneumococcal nasopharyngeal carriage among HIV-infected and HIV-uninfected children. The study involves cross-sectional carriage surveys pre- (October 2012–March 2013) and post-PCV introduction (October 2014–April 2015). Carriage surveys were conducted among HIV-infected children under 5 years of age enrolled from HIV clinics in Nampula, Maputo, and Manhiça. Carriage surveys were also conducted among HIV-uninfected children under 5 years from Manhiça community, sampled at random from the Demographic Surveillance System (DSS). Sample size was 1,001 children in the post-PCV period and 700 in the pre-PCV period.

Based on this study, a direct effect of the vaccine on VTs pneumococcal carriage was observed within 18 months after PCV10 introduction. A 41% (95% confidence interval [CI]: 6, 69) reduction in VTS pneumococcal carriage was observed in HIV-uninfected children receiving three doses. A 61% (95% CI: 9, 82) reduction was observed in HIV-infected children receiving three doses. There was also an early signal of an indirect effect among HIV-infected children, with a 31% reduction (95% CI: 11, 46) among HIV-infected children receiving no PCV doses. As expected, there was also an increase in pneumococcal carriage of non-PCV10 VTS, including serotypes in PCV13 (i.e., 19A). Figure 6 summarizes the serotype distribution for the pre- and post-PCV periods.

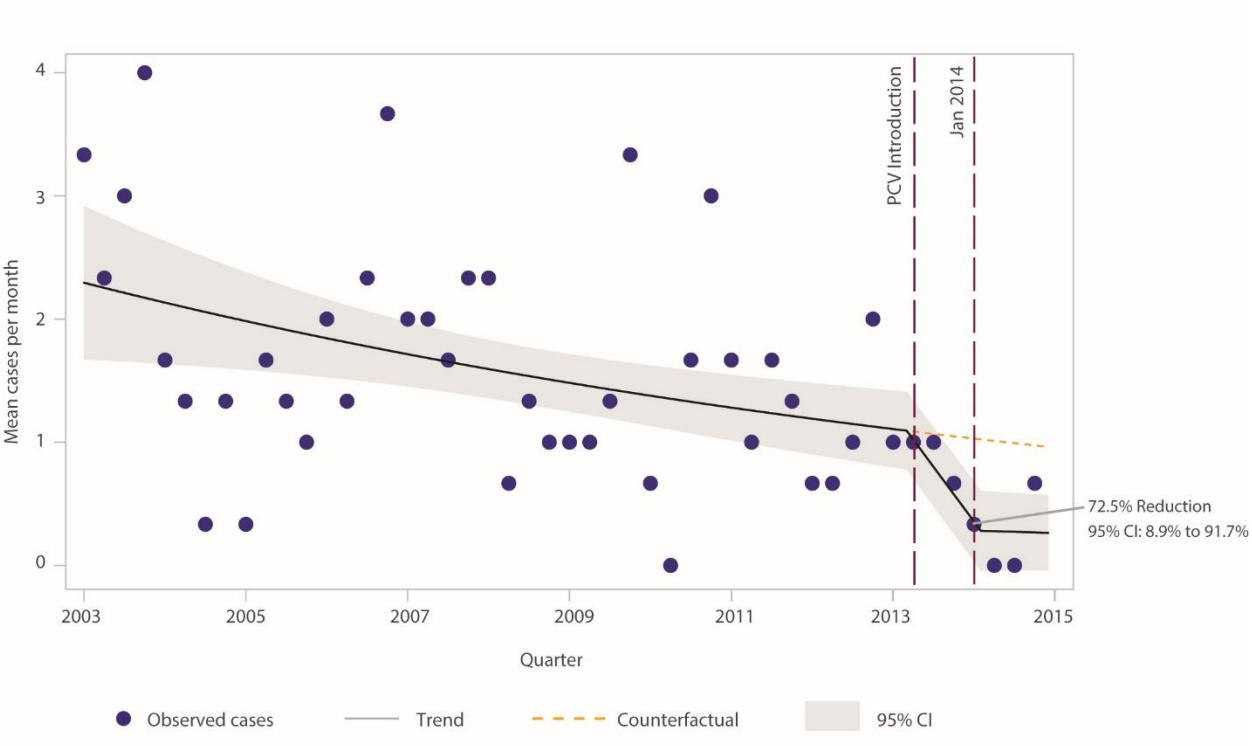
Figure 6: Serotype distribution pre- and post-PCV10 introduction in children under 5



In addition to the carriage study, we also report on preliminary results from before and after surveillance conducted in the Manhiça DSS. Based on a regression discontinuity design with the post-PCV period defined as January 2014 onward, we estimated a significant reduction in vaccine type invasive pneumococcal disease (IPD) of 72.5% (95% CI: 8, 91.7; Figure 7).

There was a non-significant reduction in X-ray-confirmed pneumonia (20.8%, 95% CI: -43.1, 56.3) and overall IPD (25.8%, 95% CI: -39, 60.4). There was also a non-significant increase in non-vaccine type IPD (49.9%, 95% CI: -30.1, 221.3). We caution that these are preliminary results on vaccine effectiveness; these represent changes only 18 months post-introduction and are based on observational studies. In the 2016 annual report, we will report on results for the case-control study in addition to updating the studies presented here.

Figure 7: Trends in vaccine-type invasive pneumococcal disease in Manhiça DSS



Robustness of finding

Finding 2	Ranking	Robustness criteria
Preliminary findings from vaccine effectiveness studies, including nasopharyngeal carriage surveys pre- and post-PCV introduction in Nampula, Maputo, and Manhiça and surveillance of invasive pneumococcal disease and X-ray-confirmed pneumonia, suggest that the scale-up of PCV is reducing pneumococcal disease burden in Mozambique.	B	These findings are based on multiple approaches to estimating vaccine effectiveness; however, they are based on an assessment only 18 months post-introduction.

Human papillomavirus vaccine

The two-year HPV vaccine demonstration project in Mozambique began in 2014. During year one, a school-based delivery model adapted from the existing tetanus school-based vaccination campaign approach was implemented. The demonstration project included three sites. One was a Gavi-sponsored district, Manhiça, that used school-based delivery, with some provision at the community level via outreach campaigns and passive availability at the health facility level, and two MOH-sponsored districts, Manica, located in the central region, and Mocímboa da Praia, located in the northern region of

the country, which used the same delivery model and target demographic as the Manhica site. The FCE 2014 report provides an evaluation of the first year of implementation.

In the second year, the country continued with the focus on school-based delivery with first and second doses administered in all three districts within the designated time periods (dose 1: April 2015, dose 2: October 2015). Because implementation funds for year two HPV demonstration were not disbursed, remaining funds from Gavi year one HPV demonstration were accessed and combined with MOH common funds (Prosaude). Given these events, Mozambique is at milestone "C3" of the FCE HPV TOC. According to key informants, Mozambique's HPV demo-approved grant proposal stipulated just one model design to be implemented, and there was neither budget nor clarifying information from Gavi to test different models in year two.

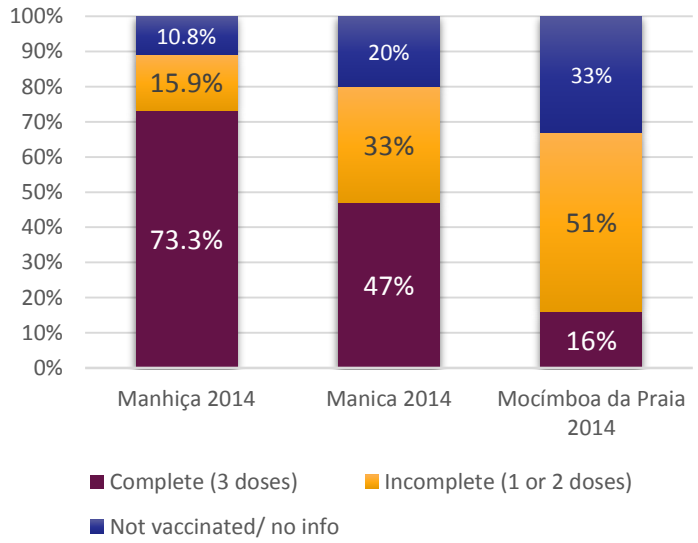
Further details of progress within key TOC milestones are listed in Annex 2.

Finding 1

The HPV vaccine demonstration project was successful in meeting the Gavi-demonstrated ability criteria of 50% coverage in the Gavi-supported Manhiça district. The Gavi-supported HPV demonstration project was leveraged to provide in-kind training & IEC support to the two MOH-led demonstration sites which tested similar delivery modalities. Coverage of HPV vaccine in these two districts, however, was notably lower due to challenges with demand generation and community mobilization, providing important lessons for national introduction. These lessons would otherwise have not been learned without the government of Mozambique funding the two additional demonstration sites.

The HPV vaccine demonstration project in the Gavi-supported Manhiça district was successful in engendering high community acceptance. As a result, it surpassed the demonstrated ability criteria of at least 50% coverage, reaching coverage of fully immunized girls of 73% based on the year one coverage survey. In addition, the Gavi-supported demonstration project was leveraged, through CISM, to provide in-kind support to the two additional MOH-led sites, through development of IEC and training materials.

Figure 8: HPV Coverage in Mozambique



In contrast, to Manhiça, however, coverage of fully immunized girls with HPV vaccine in Manica and Mocimboa de Praia was notably lower in year two (Figure 8). As documented in last year's FCE report and in a recent HPV vaccine national review meeting, one aspect that led to lower uptake of vaccination was related to rollout of IEC activities. Ensuring the timely delivery of incentives for community leaders engaged in recruitment is key; otherwise, it can become counteractive as observed when leaders propagated counteractive social mobilization messages in Mocimboa da Praia because they didn't receive their incentives on time. Interestingly, acceptability studies which interviewed vaccinated girls found a reported preference to have be vaccinated at the health facility, rather than at school or in the community. Likewise community outreach, a secondary target modality of the demonstration project, reported lower uptake numbers. Key informant interviews revealed some challenges with the transfer of funds for the community outreach work from the district to the community level.

These findings represent important lessons on the delivery of HPV vaccine in Mozambique and will assist the country in better preparing for national introduction. This is one of the key objectives of HPV vaccine demonstration projects. Notably, the aforementioned lessons, e.g., regarding IEC and community mobilization in Manica and Mocimboa, would not have been learned without the government of Mozambique funding these two additional demonstration sites.

Recommendation

1. Future stepped implementation of HPV nationally should be implemented in order to facilitate real-time monitoring and evaluation of contextual effectiveness.

Finding 2

Year one evaluation products to inform NIP and partners about the coverage, acceptability and financial sustainability of the HPV vaccine delivery model tested in the demonstration project were not available in time for the year one review due to unrealistic timelines set by Gavi as well as limitations in TA and capacity. As a result, there was a missed opportunity to refine or test an alternative delivery model in year two. This is particularly pertinent given present concerns regarding the programmatic and financial feasibility of the tested delivery model for national introduction.

The required products intended to guide the end of year one review included (i) a post-introduction evaluation (PIE) to assess the feasibility of the tested delivery model (to be conducted at the time of final dose); (ii) a community-based coverage survey (to be conducted within six weeks of the final dose); and (iii) a micro-costing analysis of program implementation costs (to begin at the time of the first dose). These products were expected to be available for the year one review (month 10-12 of the first year) in order to adjust the tested delivery model or to design a new strategy to be used in year two.

CISM, the partner responsible for completion of the three products, did not meet the March 2015 submission deadline for the evaluation products. The primary drivers of the reporting delay were:

(i) Unrealistic timelines set by Gavi, in which it was expected that the evaluation reports would be completed by the end of year one of demo and that the comprehensive review and decision to test other models would be completed simultaneously, during which preparation activities for year two of the demo would be undertaken.

(ii) Limited availability of WHO TA to complete the PIE (including the feasibility component). CISM relied on WHO TA, which was inconsistently present as WHO staff had to leave the country to participate in regional emergency missions responding to the Ebola outbreak in West Africa:

> *…but unfortunately WHO at that time we really needed them they were involved in emergency, we had a colleague who was on Ebola, so then WHO was completely off, ... and the evaluation team was depleted...* (Research Institute KII)

(iii) CISM's limited capacity to carry out the cost-effectiveness study, with confusion on what support to expect from PATH (the Gavi business plan 2015 designated Mozambique HPV demo TA). This contributed to delays in CISM's identification of a capable consultant.

(iv) CISM was tasked with the HPV evaluation but was also being relied upon heavily for TA by NIP for the other two demonstration projects. As a result they were overstretched.

(v) The roles and expectations of CISM and NIP in relation to the final reports lacked clarity. On the one hand, NIP thought CISM was responsible for delivering all reports.

> *As far as I know who has to finalize the Manhiça reports is CISM ... I think they are only having difficulties to gather all information needed to be able to share… so, as far as I know they are working on the preparation of these reports.* (MOH KII)

On the other hand, CISM felt they were tasked with producing smaller reports, which would then be collated and expanded upon by the NIP prior to submission.

> *We have agreed at the end of last round when we were very close to the deadlines, the Ministry [of Health] would integrate these short reports and would make a single implementation report for submission to Gavi ... we will send these short reports ... because for demo the MOH is the interlocutor with Gavi and not CISM*... (Research Institute KII)

Preliminary results on the acceptability, coverage, and feasibility (incorporated in the PIE) were presented in 2015, and the results of the cost-effectiveness report was presented in quarter one of 2016. As a result of the late production of the evaluation reports, it was not possible to undertake a comprehensive review of year one to inform possible refinements or changes to the delivery model in year two of the demonstration project. This was also compounded by limited awareness at country-level (clarified in March 2015 during the 2014 FCE annual report dissemination meeting) of the importance of the HPV vaccine demonstration project objective of refining or testing new vaccine delivery models in year two. However, by then implementation plans for the year two demonstration, activities were well-advanced and could not be altered.

By the time of finalization of this report, the implementation report, including the evaluation reports had been availed and a comprehensive review of the HPV demo in Mozambique held. However the meeting had been pending for a long time and stakeholders had been waiting for it;

> *…we have to meet and evaluate what has occurred and define together where we intend to go in relation to HPV and at this moment we don't have very clear information on what and how we will do it in order to manage this question of HPV.* (MOH KII)

For us to make a decision it is this review meeting we have to have in order to discuss. (Partner KII)

Finding 3

The consensus amongst stakeholders is that national rollout of HPV should move forward in a stepwise fashion using school-based, facility-based and community-based campaign delivery modalities and that accompanying implementation research should be conducted to capture and disseminate key lessons learned across a range of contexts.

At the HPV review meeting that took place shortly before the finalization of this report, most key stakeholders were present to review findings from the demonstration project and define next steps. Presentations and results were shared by CISM, INS, the FCE, and other key partners. Only the PIE for Manhica was presented, which was carried out by CISM. The PIE results for the other two sites were not shared as WHO, who led those evaluations, did not attend the meeting. However preliminary coverage from the three sites demonstrate significant heterogeneity of uptake, which highlights the critical importance of implementing demonstration projects across multiple sites to gain a fuller understanding of potential regional challenges and opportunities (Figure 8). It will also be important to understand the contextual drivers for differences in coverage and iterate implementation strategies to meet different implementation realities.

Main concerns raised were similar to those that had been raised in the NIP TWG in 2015 and by KIIs regarding the financial feasibility of the delivery model. A preliminary costing study was presented by a CISM consultant at this HPV review meeting which showed higher cost per full-immunized girl (FIG) than previously estimated ($73 per FIG). The average financial cost per FIG was reduced to $28 when no vaccine cost or supervision and monitoring at the national level costs were considered, as it is commonly reported in the literature. There were many questions by meeting participants about what had been included in the analysis and the added costs of using an external entity (CISM). Subsequently no decisions on the economic feasibility have contributed to vaccine rollout planning. There has also been particular concern regarding the use of incentives for teachers and community leaders for the national rollout. The HPV vaccine delivery model tested during the demonstration project involved the provision of incentives to those involved in the delivery of the vaccine at schools, including health workers, teachers, and community volunteers (leaders and youths). The tetanus school-based vaccination program, on which this model is derived, does not include provision of incentives. If these programs are to be integrated this discrepancy in incentives provision may prove to be a barrier.

After subgroup and plenary discussion after review of the HPV findings to date, there was consensus that implementation had been successful and that various lessons learned could be used to guide the next phase of scale-up. It was agreed that multiple delivery modalities, including school, facility, and community, should be considered and that scale-up should occur in stepped fashion, whereby implementation research can be conducted in real time to capture and disseminate best practices and lessons learned.

Recommendation

1. The government of Mozambique, together with stakeholders, should develop and submit a proposal to introduce HPV nationally through three modalities, which will be communicated through nationally organized media mobilization campaigns via radio, TV, and newspapers.
    a. Health facilities: general availability of HPV provided through SAAJ services.
    b. School: periodic school-based campaigns for girls, initiating with a year one catch-up for girls 10-13 years and subsequent 10-year-old immunization target group. Also allow for non-school attending girls access at schools.
    c. Community: periodic outreach campaigns in low school attendance areas, and supported with involvement of community leaders.

Health System Strengthening

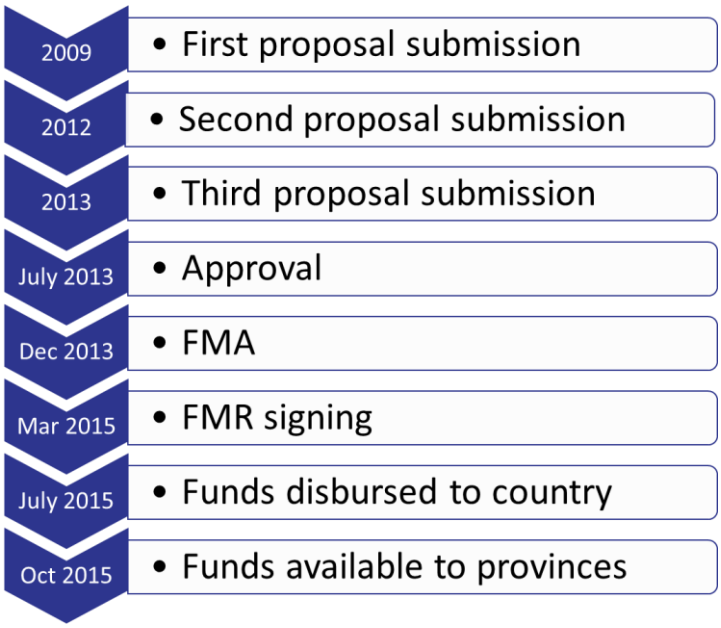
After two unsuccessful submissions, Mozambique's third HSS application was approved in July 2013. The 2014 FCE report documented that preparations for HSS implementation suffered major delays due to prioritization of new vaccines (IPV, RV, and MSD) coupled with ongoing communication challenges caused by turnover at both the NIP and the Gavi Secretariat, which continued into 2015 with only some progress being made toward implementation (Finding 1). The Financial Management Requirements (FMR) were another stumbling block, but were eventually agreed upon and signed by the country and Gavi in March 2015 after five months of negotiations. Finally, disbursement of the first programmatic funds tranche to the country came through in July 2015. The Mozambique HSS grant has thus made slow progress, moving just into the next step (from last year's) in the FCE TOC. Further details of progress within the TOC milestones are in Annex 20.

Finding 1

There was continued delay in HSS implementation with limited initiation of planned programmatic activities. Preparatory activities are ongoing at MOH and procurement under responsibility of UNICEF is taking place.

As documented in the 2014 report, the Mozambique HSS grant has been plagued by major delays since its approval in July 2013 (Figure 9). In 2015 the delays persisted, extending the preparation phase for this grant to two years.

Figure 9: Health system strengthening timeline in Mozambique



The complex nature of the HSS grant and its associated processes is the key underlying root cause. Given that the grant differs substantially from Gavi vaccine-related grants, its preparation phase processes are not only different but also new to the NIP and the larger Directorate of Public Health. Furthermore, the grant is planned to fund activities that are outside the realm of traditional NIP activities that require broader involvement of implementation entities within the MOH such as human resources and financial departments that are not supervised by the Directorate of Public Health. As a result, management discussions and negotiations necessitated the involvement of not only newer but also a greater number of individuals than those usually involved in managing regular vaccine-related grants, meaning more time was required. An example of a key HSS management component that clearly demonstrated this complexity was the financial management requirements (FMR). These required the commitment and sign-off by the departments of finance and other senior levels within the MOH as well as the involvement of other ministries. Consequently, after the required year one plans had been submitted to Gavi (in October 2014) it took another five months before the FMR was signed in March 2015.

Following signing of the FMR, the planned next steps were the disbursements of procurement and programmatic funds to UNICEF HQ and the MOH, respectively. However, UNICEF HQ was expected to submit an updated procurement budget prior to disbursements, and in order to finalize this required budget, MOH and UNICEF HQ needed to negotiate and agree on procurement details. These two steps took longer than planned for due to new challenges. MOH and UNICEF procurement norms would sometimes clash; for example, due to MOH vehicle maintenance policies, the MOH usually procures Toyota vehicles, while UNICEF only procures Nissan models.

> *This was two months ago, they told me they were working in country, UNICEF country office and the Ministry, on cost estimates for the procurement of all the equipment they would need, for the introduction of all these vaccines. So I asked a couple of times to send me the cost estimate,*

> *otherwise I am not to transfer money to supply division, and this has been on and on for maybe two months. Latest I heard a couple of days ago is that they are still working on it. So you see, we are ready to disburse HSS money. But again there are some (laughs) tweaks on their side that need to happen.* (Gavi Secretariat KII)

As negotiations were taking longer than expected, the Gavi Secretariat became concerned that the procurement plan costs would surpass the already approved budget. The Secretariat then made a unilateral decision to put on hold the disbursement of the first tranche of the programmatic funds. This challenge was finally resolved during a teleconference between Gavi, NIP, and UNICEF in June 2015. NIP and UNICEF both complained that Gavi's concern regarding exceeding the approved budget was unwarranted and the unilateral decision was unfair. An agreement was reached, and funds were disbursed to the country in July 2015, four months after the signing of the FMR.

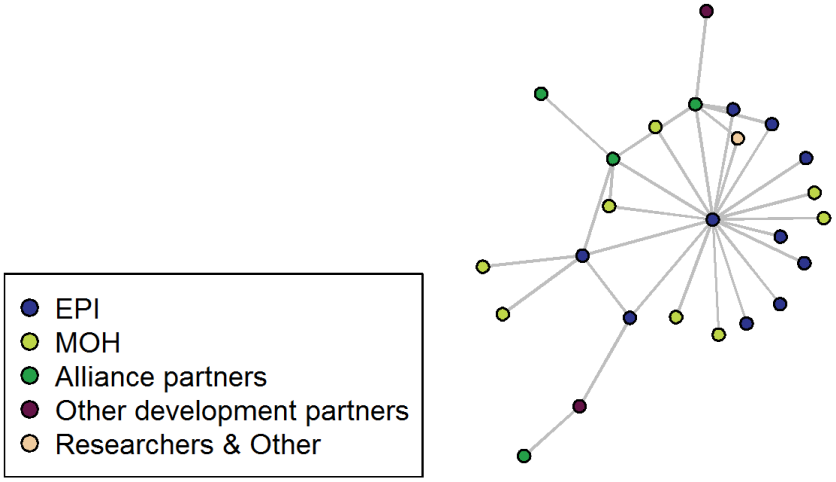
Once the funds had been disbursed, delays continued to occur. These were attributed to the long standardized process that applies to all foreign currency for government transactions that usually takes up to 12 weeks. Funds from a donor are first deposited in a designated transitory forex account in the Central Bank of Mozambique, which then transfers the money to the unique treasury account (Conta Unica de Tesouro, CUT) in the Ministry of Finance (MOF). Other request processes from the executing entity, in this case the MOH, then follow, and because of all these processes funds disbursement to local ministry accounts can take up to 12 weeks from the time they are received in the transitory forex account. As such, once the HSS funds were disbursed by Gavi, they could only be accessed by the MOH after three months, in October 2015. This means that even though the official start date for the HSS implementation was July 2015, activities began at the end of the year.

> *…yes the funds arrived but the process for us to get the money here in the Ministry is a long process. They have to register the funds in the treasury then after that they have to approve the utilization of funds and later transfer to the implementing entities. It takes time because of the registration of activities in the treasury in MOF which usually takes two or three months.* (MOH KII)

The problem of multiple streams versus the limited management capacity at the NIP's central level with the need for prioritization of competing streams (see cross-country Partner Engagement Framework Finding 2) was a root cause that impacted progress of HSS grant implementation in 2014 and continued into 2015. In 2015, the NIP had the highest-ever number of Gavi streams to manage: the introduction of three new vaccines, the second year of the HPV vaccine demo project, and the continued preparations for the commencement of the HSS grant implementation. Furthermore, the NIP has only one administrative and financial focal point, which is not sufficient for the necessary financial management of HSS funds. In order to mitigate management challenges the NIP has had to be strengthened. The Directorate of Public Health assigned one financial staff member to support NIP and appointed a senior NIP staff returning from further studies abroad as the HSS focal point. Additionally, UNICEF began the process of recruiting a Technical Advisor. HSS funds will be used to hire a HSS manager for each of the three Mozambique regions. The FMA had recommended that DAF would need to assign an HSS account focal person and that MOH would have to assign a procurement focal person from its procurement unit. The FCE will continue to track how the MOH departments involved in these areas of administrative and financial management will follow through and implement these recommendations.

The limited capacity and engagement of the EPI program is clear from the network analyses, which show a very small network of actors reportedly involved in HSS planning, particularly as compared to their reported involvement in other streams of support (see, for example, multiple vaccines section above for a description of network analysis methods). Figure 11 shows individuals named during surveys who participated in HSS planning in 2015. We see nearly equal numbers of staff from NIP, MOH (non-NIP), with two Alliance partners represented. The lines in this network represent working together relationships, and they are relatively few, particularly when compared with the new vaccine introduction network (Figure 2). The low number of relationships is indicative of the pace of work on HSS planning in 2015.

Figure 10: HSS planning network, working together relationships



There was also the high turnover of the Mozambique SCM at the Gavi Secretariat. In 2015 Mozambique had another change of SCM (after two changes in 2014 and one change in 2013, meaning the fifth SCM in the last two years). This turnover meant a transition period as the new SCM took over and acquainted himself with the country management. The effects largely impacted the HSS stream compared to the NVI grants which could be managed relatively more autonomously by the country.

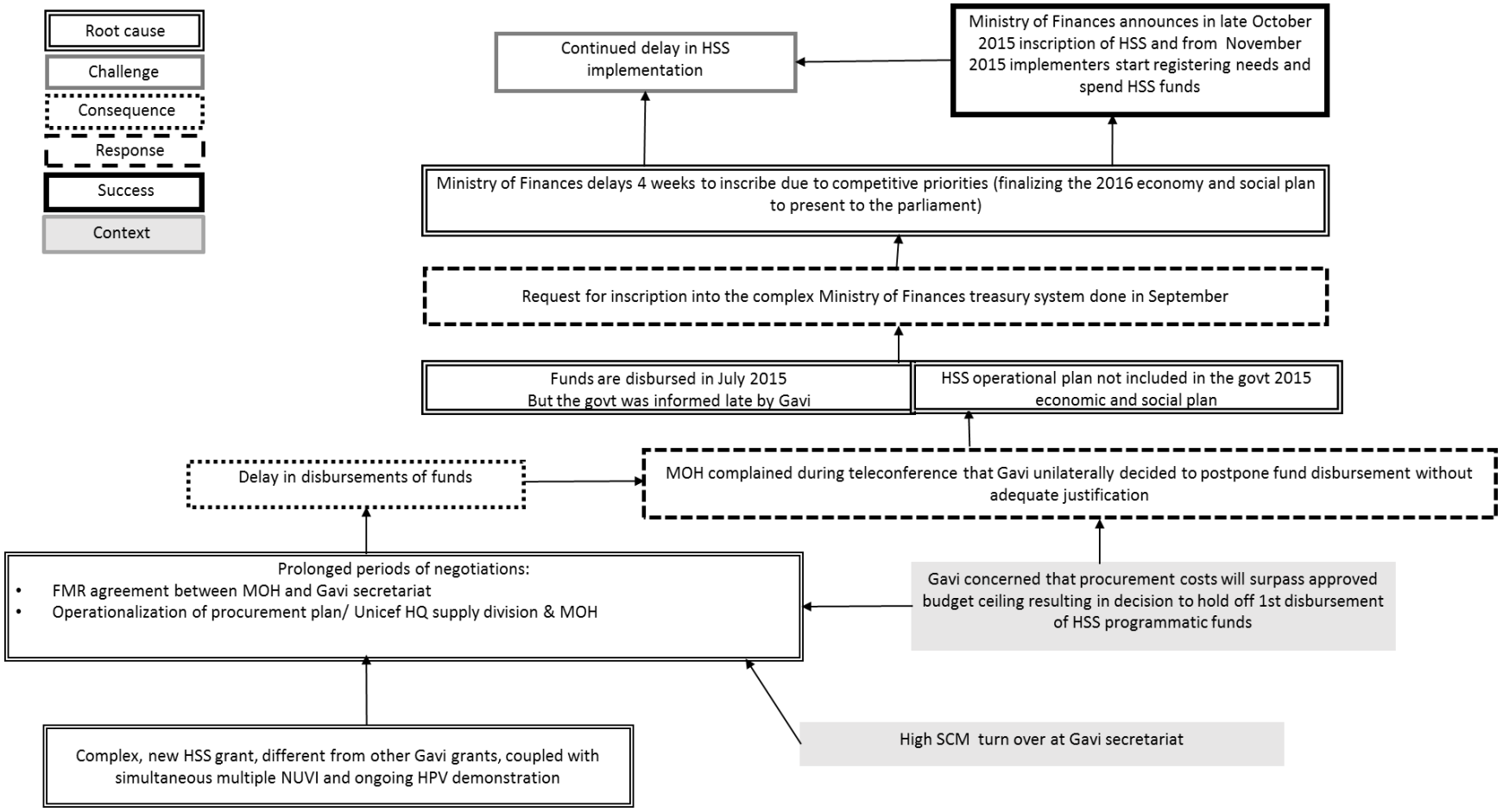
> *Also there is so much rotation with this Gavi people. One moment it is [ ], then [ ] then it is [ ] then I don't know who… so every time [the NIP manager] has to go back and explain everything from the beginning and it is not easy for us to work like that, they have very high turnover!* (MOH KII)

Another contributing root cause that the FCE team has identified is the need to develop and submit allocation plans to the Directorate of Planning and Cooperation (DPC), as an intermediate process. This is the allocation plan that then gets sent to the MOF, which registers the activities for the particular fund in the government accounting system. According to KIIs, if HSS funds had been committed earlier, for example during the annual government planning period of July to September 2014, activities would already have been registered at the MOF even before HSS funds arrived in the country. This would have had the potential of shortening some of the process. However, without the signing of the FMR and no

prior commitment letter from Gavi stating the exact date of disbursement of HSS funds, this was not possible.

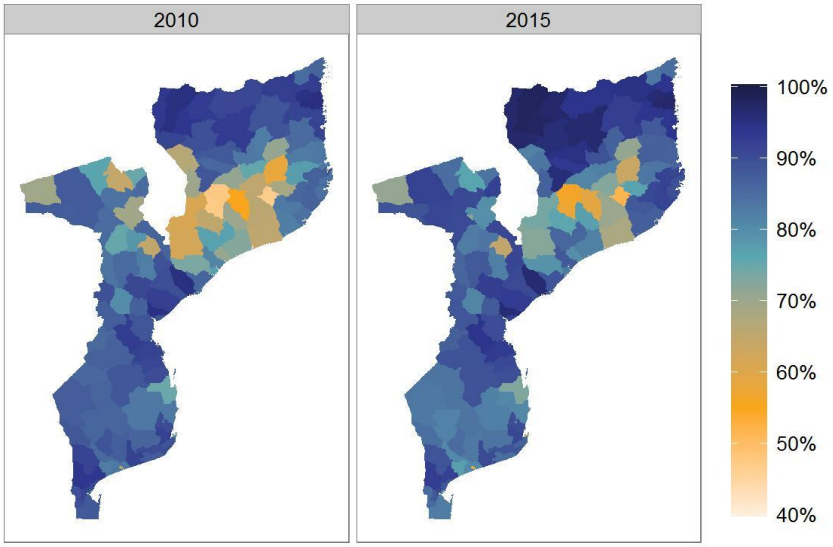
> *…the problem of these [HSS] funds is because they came out of the government cycle ... there are mechanisms within the government, I do not know if that was the main reason... until last week [last week of October 2015] is when we were told that the money was inscribed and that we could start spending …the process of making registration takes a while… (MOH KII)*

Figure 11: Root cause analysis of continued delay in HSS implementation without initiation of planned programmatic activities



Despite the delays in implementing HSS, it is important to note that our small-area estimates suggest that Mozambique has made notable improvements in vaccine coverage over the last five years (Figure 12). The recently completed IMASIDA will confirm changes in coverage over this period and will be incorporated into next year's annual report. Understanding the drivers of improvements can help to guide future system strengthening efforts in Mozambique. The low coverage areas identified below can also be future targets for health system strengthening investments.

Figure 12: Pentavalent three-dose coverage in Mozambique, 2010 and 2015



Recommendations

1. Technical assistance for financial management should be considered because programmatic management has already been boosted. Financial management may be weakened by this added workload and is a risk for the performance of the grant.

2. Understanding the drivers of immunization coverage improvements in Mozambique will help to guide future health system strengthening efforts.

Robustness of finding

Finding 1	Ranking	Robustness criteria
There was continued delay in HSS implementation with limited initiation of planned programmatic activities. Preparatory activities are ongoing at MOH and procurement under responsibility of UNICEF is taking place.	A	The robustness of findings for the evidence around this conclusion is A, because it is supported by strong data triangulation from KIIs, review of documents, and participant observation.

Cross-stream analysis

The findings regarding each Gavi stream above point to some common issues that impact all of the Gavi products implemented by the NIP. In this section we address these issues from a cross-stream perspective.

Major point 1

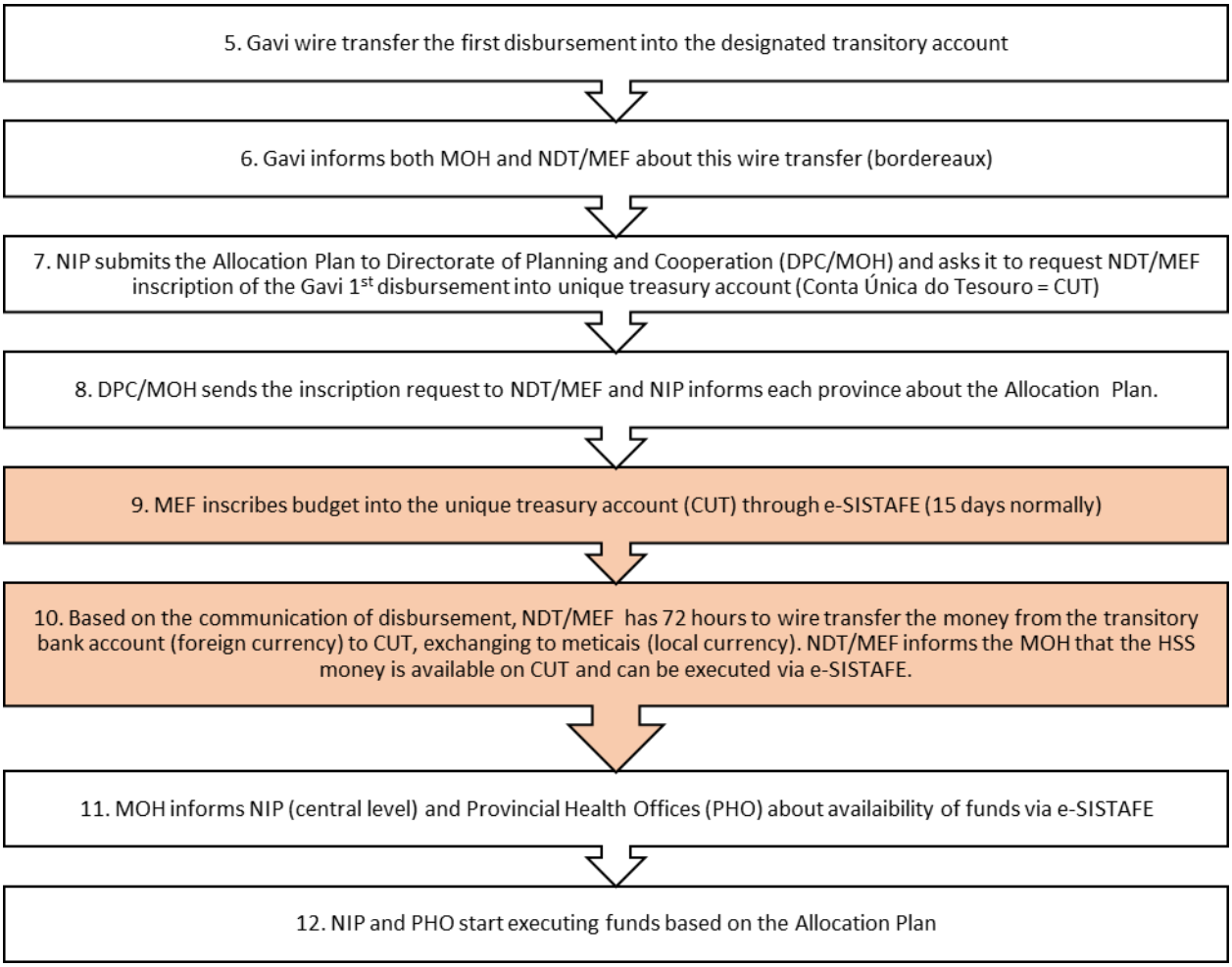
The financial management processes are complex, involving numerous steps and actors beyond the realm of the NIP; therefore, planning for new vaccine introductions (NVI) needs to take this into consideration.

During 2015, some delays were observed between the receipt of VIG and NVI trainings and the receipt of HSS funds and the start of related activities. These delays were attributed to the complex bureaucratic financial processes that foreign funds received from donors have to undergo in-country, coupled with the fact that most of these processes take place out of the realm of the NIP and the Directorate of Public Health, as well as the limited financial management capacity in the NIP and the Directorates of Public Health and Administration and Finance and the communication difficulties across the MOH.

The process for integrating donor funds into government accounts in-country is bureaucratic, long, and complex. It includes many steps as demonstrated in Figure 13. Funds from a donor are first deposited in a designated transitory forex account in the Central Bank of Mozambique, which then transfers the money to the unique treasury account (Conta Única de Tesouro, CUT) in the MOF. A separate subaccount in US dollars for the Gavi HSS funds was opened by the MOF. The MOF manages this account and transfers funds (in meticais) quarterly to the Mozambique Ministry of Health (MISAU) bank account at Bank of Mozambique in accordance with planned activities. Disbursements from the MISAU bank account at the Bank of Mozambique follow the general government procedures, in this case, MISAU's standard requesting form. At MISAU standard disbursement forms and relevant documentation (allocation plans) are submitted to DPC for approval. After approval, DPC sends the documents to the National Directorate of Budgeting in the MOF. The MOF then registers activities in e-SISTAFE, the electronic accounting system, and on completion releases funds.

> *…well, in fact the funds (HSS) arrived, but we are still not executing the funds, because one thing is to get communication about the availability of funds [from Gavi] ... another thing is to actually have the funds available on the commercial bank accounts in order to be used ... the process until the funds are available through e-SISTAFE require registration in treasury and this is a complex process.* (MOH KII)

Figure 13: Process overview for integrating donor funds into government accounts



The standard amount of time for steps 5 to 9 is 10 to 12 weeks. As such, a small delay in any of the steps leads to a delay in the process and an extension of the expected time beyond 12 weeks. The FCE has identified that the major delays usually occur in steps 9 and 10 (highlighted in Figure 14), which depend on financial management staff that fall out of the jurisdiction of the national Directorate of Public Health. The processes in these steps are complex and would require a more in-depth assessment in order to identify the specifics. In the case of HSS funds received at the end of July 2015, the processes were expedited and the MOH was informed that funds were accessible exactly 12 weeks later.

Another finding related to financial management is that the major part of the process in the MOH happens outside the realm of the NIP and national Directorate of Public Health. In addition, there are many players involved in various departments on which NIP or the Directorate of Public Health depend.

…even for us there are many grey areas still because I would say that our role ends when we request DPC [MOH Directorate of Planning and Cooperation]... we do not have a deep understanding of what happens after ... what's the flow. (MOH KII)

Furthermore, the capacity for financial management in the NIP is very low. The NIP has only one financial management staff member. The low capacity extends to the Directorate of Public Health and DAF as cited in the FMA report. In 2015, the low capacity for financial management was clearly demonstrated in the 2014 APR submitted to Gavi. While other sections that depend on programmatic staff were fully written, the financial section was left completely blank and none of the required financial supporting reports were available. This was one of the financial management weaknesses cited in the JA process and subsequently in the report. Currently, the national Directorate of Public Health has taken preliminary steps to address this by assigning one departmental financial staff to support the NIP. It is, however, not clear whether the FMA/FMR recommendations and requirements for financial management have been fulfilled. One of the FMRs reads "MISAU will reinforce existing DAF staff expertise through training, and hire new staff with academic background and experience in accounting and financial management." The FCE team will continue to track how this is implemented in going forward with process evaluation in 2016.

While it is unlikely that the design of the complex financial management processes can be changed, steps can be taken to ensure that that the processes are managed well and that government managers and implementers have the time and capability to work within the existing system. Additionally, where possible, this standard period of time expected for registration of in-country funds should be contemplated in the planning phase and included in projected implementation plans.

Major point 2

The cumulative effect of NVI and the need for new competencies in order to manage cash grants has stretched the financial and programmatic management capacity of the immunization system.

The original plan for vaccine introduction created before 2012 did not include a multiple vaccine introduction in 2015 in joint preparation for HSS implementation. What had been contemplated was that the country would start implementing HSS funds, and as such, build the system capacity for vaccine introductions over time. (The first HSS proposal was submitted in 2009, and the 2010 Comprehensive Multiyear Plan (cMYP) contemplates the introduction of PCV in 2012, RV in 2014, HPV demo in 2014, and national rollout in 2016.) The situation in 2015 was caused by a combination of delays in initiating the grants due to other delays in the grant approval process, as well as complexities surrounding HSS implementation and other additional reasons such as availability of vaccines in the market.

We didn't decide to introduce the multiple vaccines and we opted for this path…ahhh speaking specifically about the Rotavirus vaccine which should have been introduced in 2014…. Nonetheless, there wasn't availability of Rotarix in the marketplace, and there were also issues with cold chain that needed to be improved so as to facilitate vaccine introduction… Facing these challenges there were multiple delays for the rotavirus vaccine which was finally introduced in 2015. The application was done in 2013. Therefore in 2014 ideally when the vaccine should have been introduced was delayed by these multiple challenges. In relation to IPV, we made the application in 2014 and as we all know that it is required to administer the first IPV doses by December 2015… it is obligatory, thus it is one of those situations where we don't have an alternative, even as we acknowledge the challenges that the program is confronting as it

attempts to eradicate polio, we can't get behind, there are agreements that have been signed, there are real global agreements…in relation to measles, its application was also delayed and was planned for introduction in 2015, so it was more or less what happened. (Partner KII)

However, according to KIIs, by 2014 when it became clear that a multiple vaccine introduction would be necessary in 2015, consensus to proceed was achieved. There were several reasons for this decision, including the following: (1) vaccines are one of the most effective disease-prevention strategies, and there was considerable pressure to introduce vaccines as soon as possible, (2) multiple introductions would be strategically beneficial as the limited resources would be maximized across two vaccines, and (3) for IPV the country had no choice because one dose had to be introduced by the end of 2015 in order to meet country commitments of the GPEI.

…in terms of the introduction of vaccines I think this was naturally the best scenario possible because we had no more space to postpone introductions and deny the children from receiving the benefits that vaccines provide, we would've had had to have a very strong reason and in this case we didn't think that [system capacity] was a strong reason enough for us to postpone the introduction of these vaccines. (Partner KII)

… yes we thought that instead of us introducing all these vaccines over a prolonged period we thought why don't we do one process where we shall channel all resources, we would rather do it once so that we don't have to revise the vaccines register every year for example. (MOH KII)

The Mozambique National Immunization Technical Advisory Group (NITAG) plays a technical decision-making role, mainly advising on epidemiological and other technical aspects of vaccine introduction, such as vaccine efficacy, effectiveness, monitoring of vaccine-preventable diseases, etc., but does not oversee program management or program operationalization issues. The Interagency Coordinating Committee (ICC), on the other hand, is the body tasked with this role in Mozambique.

The ICC reviews and deliberates on relevant issues pertaining to the implementation plan, therefore the NIP presents these proposals to the ICC, where they are discussed and deliberated, and all applications are deliberated and approved by the ICC. (Partner KII)

The cumulative pressure of introducing several new vaccines has directly affected the immunization system. KIs have expressed that the problem of pressure on the system is not the simultaneous introduction of multiple vaccines in one year, but rather the effect of introducing new vaccines cumulatively over the period that was originally planned for (five years between 2013 and 2017). The delays in getting HSS funds to Mozambique have complicated the situation. HSS funds were intended to arrive prior to vaccine introductions and build the system for NVIs.

The key immunization system thematic areas affected by the cumulative pressure that builds from the introduction of several vaccines as identified by the FCE team through KIIs are related to the cold chain and data quality. For all originally planned NVIs for introduction between 2013 and 2017 (PCV for 2013, RV 2014, HPV demo 2014, and HPV national rollout 2016) to be feasible, Mozambique needed to have undertaken a major strengthening of the supply chain and a cold chain expansion. In order to achieve this, a comprehensive cold chain expansion plan was developed in 2013. As per joint appraisal discussions, the implementation of the plan was on track, especially at the national-level warehouse.

A key challenge that emerged for the NVI plan was that HSS funds that had been planned for cold chain expansion were delayed, so much so that the country resorted to other contingency funds to accomplish some of the cold chain expansion targets. The warehouse at the national level was expanded on time for the 2015 NVI launches using funds from USAID that were channeled through UNICEF. Some refrigerators for provinces were also bought using the same contingency funding. However, the FCE team observed very tight spaces serving as storage for vaccine refrigerators during observation visits in the provinces, meaning that despite the major strides that were made to expand the cold chain, more will still need to be done as the number of vaccines offered through the health care delivery system continues to increase. This use of contingency funding from another donor led to reprogramming of HSS funds. Funds that had been planned for central-level warehouse expansion were reprogrammed for peripheral (e.g., central and northern region warehouses) expansion.

Data quality has been identified in the NIP as a weak area and is included in the HSS strengthening plan. Recent discussions at the JA as well as findings from KIIs point to this as another area that is likely to worsen as new vaccines are added to the immunization system. The paper-based immunization registers used by health workers are prone to error as they become longer with the introduction of additional new vaccines. At the moment there is no plan for personnel expansion at the immunization service delivery level, and the same health workers will be relied on to deliver an increased number of vaccines and enter the data. The quality of this aspect is likely to suffer although it could be mitigated through a system design approach that could reduce the data burden on health workers by strengthening other aspects of the supply chain.

The level of work to manage the HSS grant has necessitated the strengthening of the NIP. A senior NIP staff returning back from study leave abroad had been appointed as NIP HSS focal point. UNICEF is currently hiring a technical advisor that will be seconded to the NIP. For financial management, the FMA pointed out that DAF would need to allocate an HSS account focal person and that MOH would have to allocate a procurement specialist. At the moment, the Directorate of Public Health has assigned one of the department's financial staff to support NIP. Additionally, HSS funds will be used to hire an HSS manager for each of the three regions in Mozambique. These NIP strengthening efforts do not cater to financial management activities executed by staff who are not in the national Directorate of Public Health. Of concern are the processes where the FCE noted that most delays occur and which are handled by staff in the DAF.

Major point 3

The Joint Appraisal (JA) process resulted in the identification of a comprehensive set of technical assistance (TA) needs; however, the process was resource-intensive and may be improved through better clarification of roles and responsibilities across key stakeholders.

The JA process was implemented for the first time in Mozambique in August 2015. Embedded in this process was a new approach for identifying TA needs and suggesting TA providers in order to inform TA funding through the Partners' Engagement Framework (PEF), also a new approach for 2015.

Findings from KIIs regarding the JA corroborated observations by the FCE team during the process. Major issues were lack of clarity on roles of each involved entity with regard to the JA process itself, and secondly, on next steps that follow the identification of TA needs.

Regarding the process, both government and partner stakeholders in Mozambique understood the JA to be a process requiring in-depth document review and assessment of the status of the implementation of Gavi support. The involvement of external teams (WHO, UNICEF, and Gavi Secretariat) created other expectations. In previous exercises where external teams were involved, for example program reviews or PIEs, it was the external team members who facilitated sessions, preparation of presentations, and the actual writing of reports, while NIP provided oversight and leadership of the process. As such, the NIP expected a similar structure for the JA process. Lack of clarity around this expectation may have been due to suboptimal implementation and communication of the JA process, which itself was due to lack of clarity around the process at the Secretariat, as well as the turnover in SCMs for Mozambique.

> *The Joint Appraisal is a new process, I think Gavi has passed different information itself at different times, and the process started to be better clarified in teleconferences that were happening one month before the Joint Appraisal and this allowed us to refine the preparation... but the implementation of the Joint Appraisal was a difficult process, it was a difficult process, …first this concept of country led process was very loose was not very specific, ok is a country process, is country led but is joint … that was what I ended up realizing is that the country conducts its review and then calls Gavi and presents its review to Gavi and discusses the critical issues because the expectation that the EPI program had is that Gavi would come to conduct the work jointly*. (Partner KII)

> *We didn't have clarity until in the end about what was intended in the Joint Appraisal intended.* (MOH KII)

Furthermore, UNICEF hired a consultant to assist the process, which the Gavi Secretariat was not aware of and the SCM only found out about when he arrived in Mozambique. The NIP and country stakeholders thus thought that facilitation of the JA workshop would be handled by Gavi Secretariat in conjunction with UNICEF and the consultant while NIP would provide oversight and leadership, whereas Secretariat staff intended the process to be "country-led." The misunderstanding of the situation meant that facilitation of the workshop fell to the consultant, leading to long discussion sessions and not keeping to the meeting agenda timelines. In addition to the four-day meeting attended by a wide range of stakeholders, the consultant spent two weeks reviewing data and reports to inform the process. A factor that contributed to the NIP and its stakeholders being more rigorous in this JA exercise was the fact that Mozambique had not conducted an EPI review in the previous three years. Given the thoroughness that the NIP and its stakeholders put into the JA, the whole three-week JA process ended up being relatively time-consuming, to the extent that stakeholders in KIIs said that it would be unfeasible for NIP to allocate as much time annually to the JA process.

> *….the Joint Appraisal, it was good that yes for us as a team we took time to reflect, it is difficult for us to get time to do that……but this process will be every year? mmh it is going to be impossible for us to take that much time every year to do Joint Appraisal. (MOH KII)*

The NIP and partners were also not clear on how to identify TA needs and each entity's role. However, consensus was reached among the participants to use existing documents (e.g., HSS situation analysis documents, EVM results, FMA/FMR requirements, and FCE reports). After identification of TA needs it was not clear what the next steps were to be undertaken toward the PEF. The instructions from the Gavi Secretariat were not explicit on who was to select new potential in-country partners for the PEF. For example, after identifying current TA and the gaps for support, the JA Reporting Guidance states:

> *Information provided in this section should be used to trigger a discussion with the ICC, HSCC or equivalent on how resources can be mobilized to fund the assistance to be provided by national research and technical institutions, civil society organizations, bilateral or multilateral organizations. It will also be used to inform discussions at the regional and global levels on possible technical assistance provision through Gavi Alliance partners.* (2015 Joint Appraisal Reporting Guidance)

The Gavi Secretariat TA expert that was present informed the workshop participants to categorize identified TA needs into those that were already being covered by existing partners and those that were not. Those that were not being covered by an existing partner were placed under the PEF category in the JA report TA table. A concern that arose was that the PEF process might create new responsibilities for an already overburdened NIP to manage TA partners for Gavi, leading the MOH to request TA for coordinating the new TA.

> *TA is a process that we didn't know, no one knew for sure how it should be conducted nor the deliverables, so when it is like this it is very difficult to know which type of information is needed. (MOH KII)*

> *We had different orientations on the TA components, not only different orientations but also templates…first we listed the TA needs at the high-level (concepts), but then later we received a template that was more detailed and asked if it was for a consultant or a workshop, etc… so we didn't end up completing the work and as a country we were not happy. (Partner KII)*

> *Other technical assistance instructions were sent two or three weeks after…Gavi sent, including a table that we have to fill and state the objective of this technical assistance.* (Partner KII)

In the FCE report's cross-country section on PEF, we raise concerns that as the process is designed and implemented at the global level, it may not be able to achieve what countries hope it will, articulated clearly in Mozambique's JA report:

> *PAV [EPI program], supported by WHO and UNICEF, will lead the process of identifying a broader range of TA partners – including other governmental bodies, CSOs and Mozambican institutions – to develop a joint TA plan that can: 1) address TA needs with systematic solutions and appropriate delivery mechanisms; 2) generate a collaborative knowledge network that will strengthen national institutions for sustained capacity development; and 3) capture the impact of increased capacity in grant performance.*

Furthermore, one senior government KI expressed the desire for Gavi TA to build capacity over time. The FCE team will track the PEF and JA processes into 2016 to determine whether the global-level PEF process helps achieve this vision of TA.

An advantage of the Mozambique JA process was that Gavi and the core partners had their teams in-country at the same time, and this was seen as very advantageous by the country for pushing stalled issues.

> *First I think it was good…whether it was carried out well or not…the concept is a good one. It is good for Gavi to come here, I like it that they came here…there are countries where they just did JA remotely by telephone...it is true that this (in country presence of all involved in JA) increases*

the work for the team but I think there are fundamental advantages of having everyone seated at the same table… I think it was a reality check when Gavi is here, also there are certain things that seem undoable to both sides when we communicate through phone or email but when we are all at the same table we are able to work through these (differences). Also we had the opportunity to have bilateral meetings with them (Gavi) and this helped clarify many things. (Partner KII)

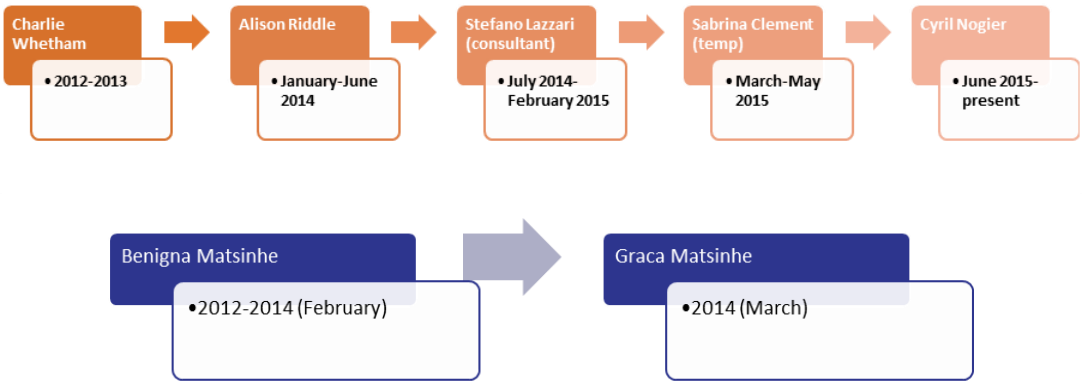
Major point 4

Senior Country Manager (SCM) turnover at the Gavi Secretariat impacted negatively on communication with Mozambique and contributed to suboptimal implementation of Gavi products before the arrival of the new SCM in Q2 of 2015.

Key informants in Mozambique expressed that the frequent change in the Mozambique SCM in the last two years impacted the implementation of Gavi streams, with more effects on the HSS grant. Mozambique has had five SCMs between 2014 and 2015 (Figure 14). Every time there was a new SCM, the negotiation processes would be delayed and the relationship building restarted.

Also there is so much rotation with this Gavi people. One moment it is Cyril, then Sabrina then it is Frank then I don't know who… so every time Graça has to go back and explain everything from the beginning and it is not easy for us to work like that, they have very high turnover! (MOH KII)

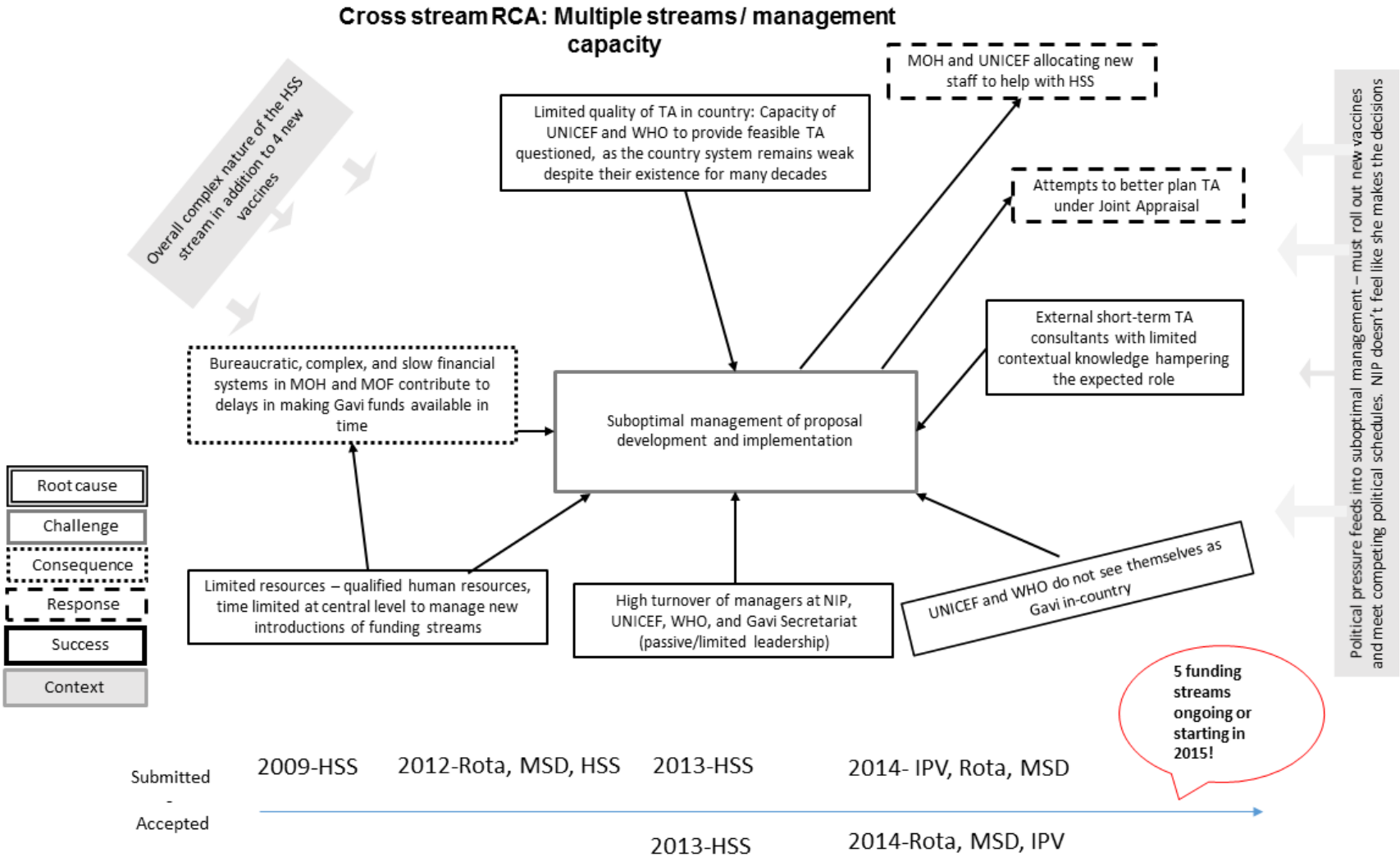
Figure 14: Timeline of Mozambique SCM turnover between December 2013 and June 2015 in orange, EPI manager in blue.



Another challenge has been the English language. Mozambique is a Portuguese-speaking country, and many of the NIP stakeholders, especially from MOH, are not professionally proficient in English, leading to some difficulties in communication at times. Fortunately the recently appointed SCM speaks Portuguese, and stakeholders in Mozambique have expressed that this is already facilitating communication.

….at the moment I think the communication is quite fluid. There is the advantage that he speaks Portuguese. That helps a lot to understand many things. (MOH KII)

Figure 15: Cross-stream root cause analysis for multiple streams and management capacity



Recommendations

1. Future introductions and activity plans need to include the time it takes Gavi funds to be accessible in order to avoid a situation of planned activities not taking place because monies are at the treasury but are not accessible for utilization by MOH, creating a perception of delay.
2. Weak financial management is a risk for Gavi funds and especially for HSS. TA for this should be considered by Gavi to ensure that funds are appropriately allocated and managed at the central and subnational levels. The TA needs to be seconded into the MOH DAF and/or in the Directorate of Public Health to support the financial management teams in these departments and work closely with the newly appointed HSS focal person in the NIP.
3. FMR for strengthening accounting staff in the DAF should be implemented.
4. Listing roles and responsibilities in one accessible document prior to the JA process would help facilitate communication and subsequent joint work efforts of stakeholders.
5. Gavi should be more explicit to the country and partners on their roles in JA and PEF, specifically clarifying how resources are meant to be allocated between Gavi Secretariat members (UNICEF and WHO) and other immunization stakeholders (MOH, VillageReach, USAID, CDC, FDC, etc.).
6. Any TA identified to support the implementation of Gavi products should be preferably country-based.
7. Mozambique expressed desire that Gavi TA should build capacity. Gavi, together with the GOM should consider an indicator to measure this, while clarifying what type(s) of capacity are to be prioritized.
8. SCMs should be professionally proficient in the country's official language which has been addressed with the present appointment.
9. Gavi should minimize high turnover of SCMs and have in place mitigation strategies in the event of turnover.

Major point 5

Mozambique remains heavily reliant on external financing of its immunization program. The introduction of multiple new vaccines raises questions about the ability of the country to financially sustain delivery and to meet its co-financing obligations.

In 2015, the Mozambique FCE team conducted a resource tracking study that was a follow-up to a similar study conducted in 2014. The main aims of the study were to understand the monetary resources being dedicated to immunization in-country and the proportion of the government's contribution relative to Gavi and other funders. This information is important in order to better predict Mozambique's readiness to sustainably comply with increased co-financing requirements as new vaccines continue to be introduced in the country. In-depth interviews with key stakeholders were also undertaken in order to understand the flow of funds from national to subnational levels and bottlenecks and enhancements to the flow.

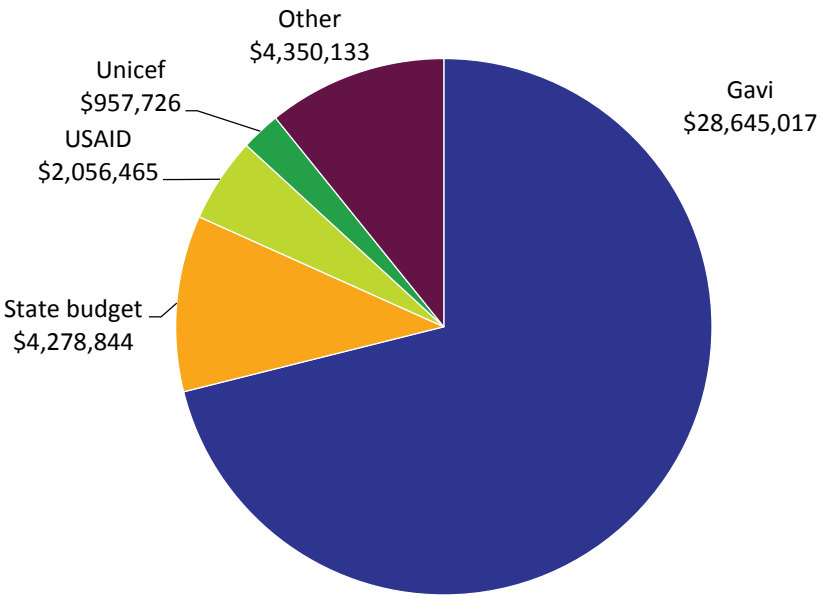
Funding sources, financial agents, and subnational-national flows

Immunization activities in Mozambique are financed by several sources, and the funds flow through many agent organizations before being disbursed to health care providers, typically the MOH. Funding sources identified include the state budget and the common repository to which several bilateral governments contribute, known as the Prosaude in Mozambique, multilaterals such as Gavi, WHO,

UNICEF, and Canadian International Development Agency (CIDA), other non-Prosaude bilaterals such as USAID and government of Catalunha, foundations such as Bill & Melinda Gates Foundation (BMGF) and Aga Khan, and other NGOs such as ISOGLOBAL, GSK, a private-sector pharmaceutical company, as well as the Institute for Health Metrics and Evaluation (IHME). These organizations are similar to those identified in 2013, with two additions, IHME and Fundos para Vigilância (FPV), and the subtraction of other governments including UK, Ireland, the Netherlands, Switzerland, Denmark, and Belgium.

Total amount of spending for immunization captured by this study in 2014 was US$40,228,184, which translates to US$1.56 per capita total spending. Results are limited by projects reported by participating organizations, and because not all organizations reported every funding stream, this total may be underestimated (Figure 16). The largest amount of funding for immunization in Mozambique was provided by Gavi (71%), followed by state budget contributions (11%) and USAID (5%). For comparison, in 2013, Gavi (35%), UK Department of International Development (DFID) (27%), and the state budget (government of Mozambique) (19%) were the largest funding sources.

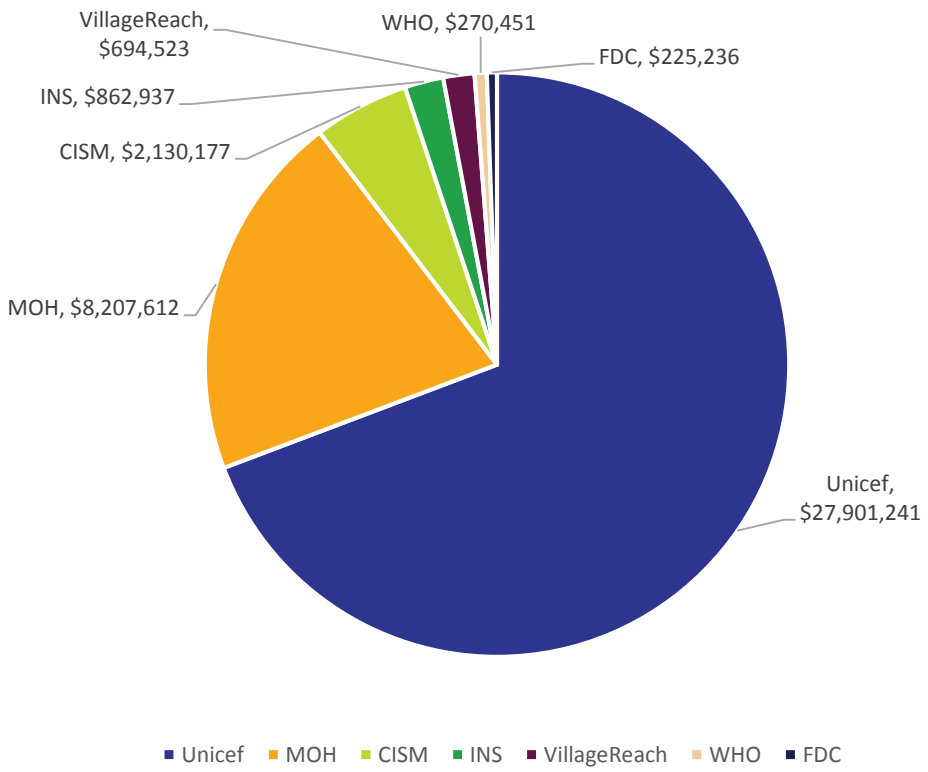
Figure 16: Percentages of total funding for immunization in 2014 in Mozambique included in study by source of funding



Overall, these results highlight the current overwhelming dependency that Mozambique has on external donor financing for immunization.

Financing agents in Mozambique include UNICEF, CISM, WHO, VillageReach, INS, FDC, WHO, and MOH. UNICEF was the financing agent that handled the largest volume of funding, followed by MOH (Figure 17).

Figure 17: Amount of financing for immunization handled by each financing agent in 2014 as provided by participating organizations



Funding flows and bottlenecks

Immunization funds from sources support the country in two ways: first by being channeled through procurement agencies; for example, through UNICEF for procurement of vaccines and other commodities. Currently, the majority of Gavi funds are channeled through UNICEF for these purposes. Secondly, funds are also disbursed to the country using different channels. As such, the flows for immunization funds from national to subnational levels are very complex. Immunization funding flows from sources to subnational levels (i.e., provinces, then districts) occurs through the following channels (Figure 18):

1. General budget support (GBS) from the MOF directly to provinces. The GBS contains funding from the 19 government of Mozambique budget donors.
2. State budget, which includes the common fund (Prosaude) from the MOF to the MOH account (executed by MOH signatories to fund activities at both the central and provincial MOH levels). The common fund is known as Prosaude and contains funds from MOH budget donors.
3. Funds directly from donors to the MOF then to the MOH account (executed by MOH signatories to fund activities at both central and provincial levels); for example, Gavi cash funds for ISS, VIGs, and HSS.

4. From donors to multilaterals then to the MOH, either at the central level or directly to provinces – for immunization these are funds that are channeled through UNICEF and WHO that could be from Gavi or other donors; for example, CIDA, USAID, and other UN donors in-country.

5. From donors to NGOs that support MOH in-kind at the central and provincial levels. Examples for these types of transfers are funds from BMGF going to VillageReach or from USAID going to Abt Associates (ABT) or from the Norwegian embassy going to FDC. These NGOs typically support mostly provinces and districts in-kind and avoid transfer of cash funds to these entities.

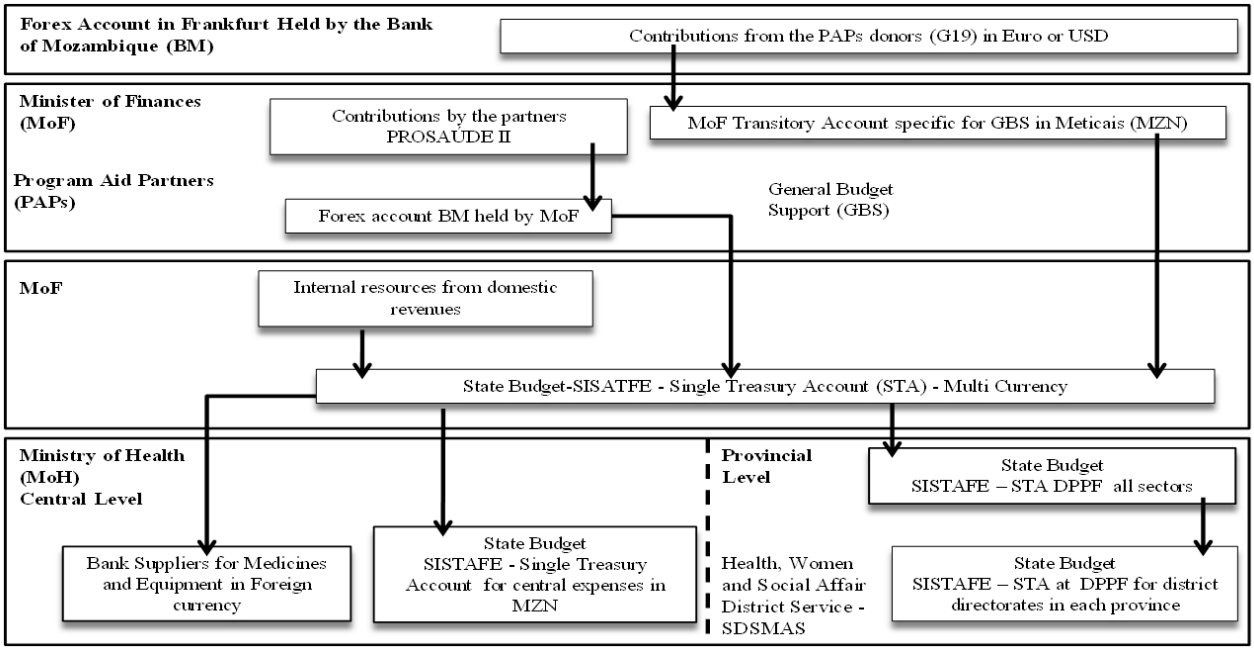
6. Funds from donors to research institutes directly or indirectly. In this category, examples are Gavi funds to CISM transferred through CDC and other Gavi funds to CISM transferred through the University of Washington (IHME). CISM funds from government of Catalunha were transferred through the ISGLOBAL institute.

7. From donors that are also registered as NGOs in-country; for example, The Aga Khan Foundation, which typically provides in-kind support to one province.

8. Funding from Gavi to the MOF, then to the MOH, and then to NGOs and/or research institutes; for example, in 2014 Gavi HPV funds were transferred through MOH to FDC and CISM for social mobilization and evaluation, respectively. This was the first time such a transfer was implemented for Gavi funds.

9. From GSK, a private-sector pharmaceutical company, which provided in-kind support to the MOH at the central level for NVI training in 2013 and 2015.

Figure 18: A summary of funds that are channeled through the government of Mozambique general budget support and state budget



Following the 2013 and 2014 resource tracking, the FCE found that funding from sources to non-government agents usually flowed smoothly without any barriers. These non-government agents are relatively smaller independent entities (as compared to the government) that manage funds autonomously with fewer flow problems. These agents preferred to support government at both the central and provincial levels via in-kind support rather than to transfer cash due to the bottlenecks, which are discussed further below.

On the other hand, entities that depend on government ministries and departments at both the central and provincial levels reported a number of bottlenecks to funding flows. At the national (central) level, donors often tie disbursements of funds or vaccines to certain conditions, which dictate that the MOH implements certain activities prior to disbursement. This was noted by the FCE in 2013 when Gavi didn't disburse funds until the MOH undertook subnational trainings. In 2015, GSK held back disbursements of vaccines awaiting subnational trainings. Secondly, bottlenecks are exacerbated by the bureaucratic process that the funding disbursed to the government has to undergo from the time that funds are disbursed to MOF to the time that they can be utilized by the MOH at both the central and subnational levels. As has been described in detail in Major point 1 above, it usually takes about 12 weeks for funds to be available for utilization.

> *The flow of funds at MOH is not good. I think that it requires an in-depth study, more comprehensive to strengthen the financial management of funding flows from the MOH.* (Partner KII)

The delays in accessing funds at the central level of the MOH led to consequences that were noted at the provincial and district levels. Funds for earmarked activities such as trainings and social mobilizations for NVIs always arrived late with these entities having to rush through activities at the last minute.

> *For us here in the province the main problem with the new vaccines is that we always receive everything late…funds for trainings, social mobilization material…and this is a big challenge for us, they always come late from MoH (central level).* (MOH provincial KII)

Sometimes the funds came much later, and this was especially noted during 2014 for HPV census and social mobilization activities. The situation was worse during the HPV demo project and led to mistrust and at times the sabotaging of activities by disgruntled teachers and community leaders.

> *They [the funds] don't come on time. In the case of last year during the HPV administration, the delay in funds slowed the process of paying teachers and community leaders for their work in the HPV demonstration project. Many of them started to distrust and question the Provincial health directorate, and sent messages to the health director, the chief medical officer to demand the monies that were due to them, and they accused them of stealing their wages for their support of the project.* (Provincial representative, MOH KII)

The main bottleneck that led to a number of financing agents choosing to support the MOH in-kind rather than through cash disbursements is the issue of accounting for monies that had been utilized. Multiple key informants, including from the MOH and key NIP partners, unanimously cited the problem of justifications of used funds by the MOH as the main issue that held up disbursements of funds leading to disruption in the flow of funds, sometimes resulting in project delays.

> *Our greatest challenge which we confront is in the justification of funds spent at the Provincial Health directorates, and we are required to justify these funds, as we are the ones who have received the funds and then transferred them to the Provincial Health directorate.* (MOH central level KII)

Across the health system, blame was placed on others, typically at lower levels. External partners blamed the MOH, the MOH central level blamed the provincial level, and provinces blamed districts. The provinces said that poor compliance and understanding of financial reporting requirements at the district level made it impossible for the province to report in a timely fashion. One provincial representative responded when asked about the financial bottlenecks at the provincial level,

> *This is not true. The amount is not managed at the level of the provincial health department, it is transferred to the district, where is it applied. The problem is the districts create receipts for work done that do not follow the rubric, if receipts come at all.* (Provincial representative, MOH KII)

Specific challenges noted included lack of knowledge of norms for filling out forms and following administrative procedure, specifically the lack of training and follow-up supervision for more peripheral health managers who were relatively newly introduced to these tasks through decentralization. Mozambique has been undergoing an extensive and prolonged decentralization process over the last 10 years. The roles and responsibilities have been assigned and devolved to lower levels, but often with limited training in financial management, which is reflected in these findings.

Suggestions recommended by key informants to improve this situation included improved links between programmatic and financial centers within the MOH and TA specifically targeting financial management.

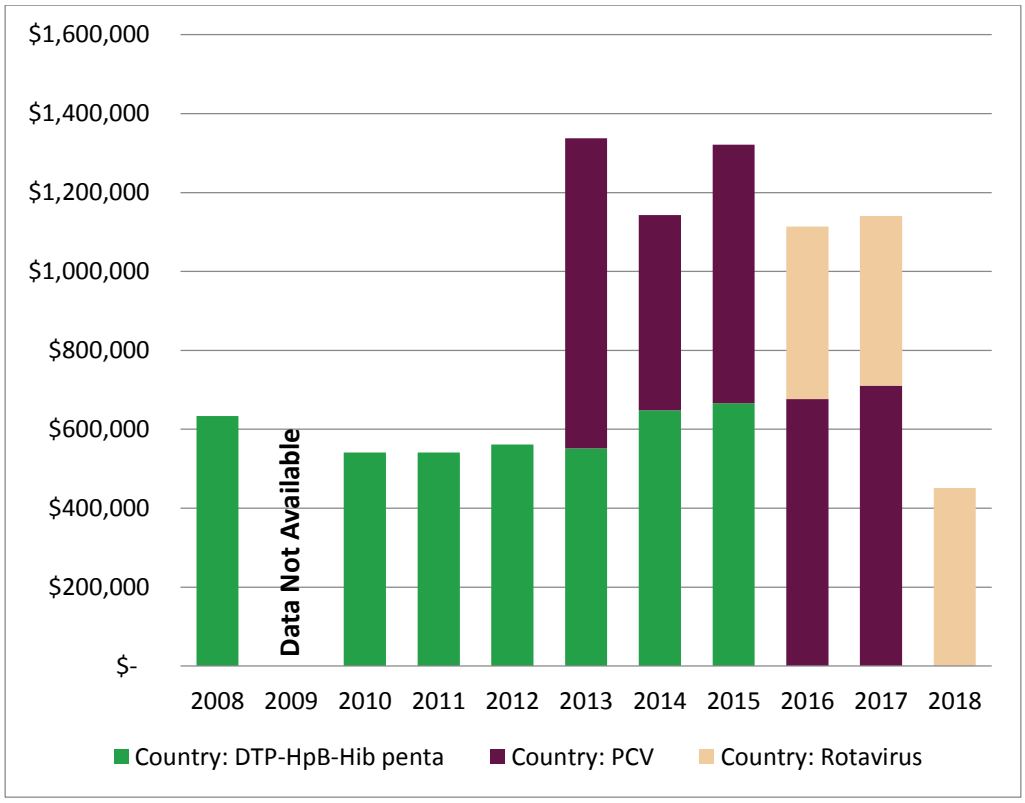
When funds are delayed from Provincial Health Directorates, we contact the provincial heads of EPI and finance to try to study which justifications are missing or poorly filled out. And we were able to recuperate a lot of justified funds as a result. The MOH should try the same approach and work with the staff in the Financial Directorate of Health. (Partner KII)

Co-financing and sustainability

Within the context of heavy dependence on external financing, it is important to note the increases in the co-financing requirements that accompany the recent introductions of new vaccines, particularly PCV and more recently rotavirus vaccine. Figure 19 shows the projected increase in co-financing for Mozambique associated with these new vaccine introductions. Country contributions are projected for the next year and include rotavirus, using country contribution data, which was collected from projected data from the previous year's annual report. A limitation of these data may be that there are differences between projected expenditure volumes and actual expenditure volumes.

Based on Gavi co-financing data,[23] pentavalent (DPT-HepB-Hib) co-financing has been in place in 2008, and co-financing for PCV began in 2013 (Figure 19). Data are provided for years 2008-2013 and projected for years 2013-2018.

Figure 19: Annual co-financing amounts for pentavalent, PCV, and rotavirus vaccines by the government of Mozambique (in USD)



Note: Country data not available for 2009.

Key stakeholders interviewed at the central level universally noted that significant challenges exist surrounding financial sustainability issues.

> *…we always need to ask funds from Gavi, to carry out the introduction, now first we have to agree first to the mechanism of delivery, how are we going to do this, we wait for them to say yes, it will be financed, as always 5 years and we also as a country…I mean to say that this question is always asked and they always recommend that we need to think of another way to finance the EPI program… because there will be a day when Gavi doesn't give more money.* (Central-level KII)

It was also recognized that there is a broader need to create sustainable capacity in financial management as co-financing increases, which will increasingly force the MOH to manage their resources and funds at all levels of the health system.

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