

# MOZAMBIQUE

Findings from the 2014 Gavi Full Country Evaluation



---

This brief presents findings for Mozambique from the 2014 Gavi Full Country Evaluation (FCE) Annual Dissemination Report. It was prepared by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington in collaboration with members of the Gavi FCE Team: University of Eduardo Mondlane (UEM), Mozambique; Health Alliance International (HAI), Mozambique; International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b); the Infectious Diseases Research Collaboration (IDRC), Uganda; the University of Zambia (UNZA), Zambia; and PATH, USA. This work is intended to inform evidence-based improvements for immunization delivery in Mozambique, partner FCE countries, and more broadly, low-income countries, with a focus on Gavi funding. The contents of this publication may not be reproduced in whole or in part without permission from the Gavi Full Country Evaluation Team.

Citation: Gavi Full Country Evaluation Team. *Mozambique: Findings from the 2014 Gavi Full Country Evaluation*. Seattle, WA: IHME, 2015.

**Institute for Health Metrics and Evaluation**  
2301 Fifth Ave., Suite 600  
Seattle, WA 98121  
USA

Telephone: +1-206-897-2800  
Fax: +1-206-897-2899  
Email: [comms@healthdata.org](mailto:comms@healthdata.org)

[www.healthdata.org](http://www.healthdata.org)

**University of Eduardo Mondlane, Faculty of Medicine**  
Salvador Allende Ave, 702 Maputo  
Maputo C. P. 257  
Moçambique

Telephone: +258 (21) 428076  
or +258 (84) 3158350  
Fax: +258 (21) 325255  
Email: Baltazar Chilundo, MD, PhD  
[baltazar.chilundo@gmail.com](mailto:baltazar.chilundo@gmail.com)

[medicina.uem.mz](http://medicina.uem.mz)

**Health Alliance International**  
1107 NE 45th Street, Suite 350  
Seattle, WA 98105  
USA

Telephone: +1-206-543-8382  
Email: Sarah Gimbel, PhD  
[Sgimbel@uw.edu](mailto:Sgimbel@uw.edu)

[www.healthallianceinternational.org](http://www.healthallianceinternational.org)

## 2014 evaluation activities

### Assessment of progress, successes, and challenges

- Collected and reviewed documents relevant to Gavi funding, operational plans and budgets, guidelines, and datasets.
- Evaluators attended all National Immunization Programme (NIP) Technical Working Group (TWG) meetings, an NIP teleconference with the Gavi Secretariat, and health system strengthening (HSS) planning meetings and retreats.

### Analysis of administrative data on vaccine coverage

- Used Módulo Básico and NIP vaccine coverage data to examine scale-up and routinization of pneumococcal conjugate vaccine (PCV).

### Resource tracking

- Conducted an Expanded Program on Immunization (EPI) expenditure accounts exercise, adapting the 2011 System of Health Accounts (SHA) methodology and estimation techniques to estimate the total envelope of resources for immunization activities in 2013.

### Key informant interviews

- Conducted 23 interviews at the national and district levels with government staff, Gavi partners, non-governmental organizations (NGOs), and a health research center.
- Conducted 10 interviews at the global level with the Gavi Secretariat and Vaccine Alliance partners.
- Conducted brief interviews with stakeholders at the NIP, WHO, and UNICEF to confirm factual information

### Inequality analysis

- Compiled and analyzed all available survey data sources of household wealth and vaccination coverage.
- Estimated inequalities in vaccination coverage by wealth and gender.

### Small area analysis

- Compiled and analyzed all available survey and census data sources.
- Estimated province-level vaccination coverage and under-5 mortality.

# ANALYSIS of immunization coverage, child mortality, and inequality

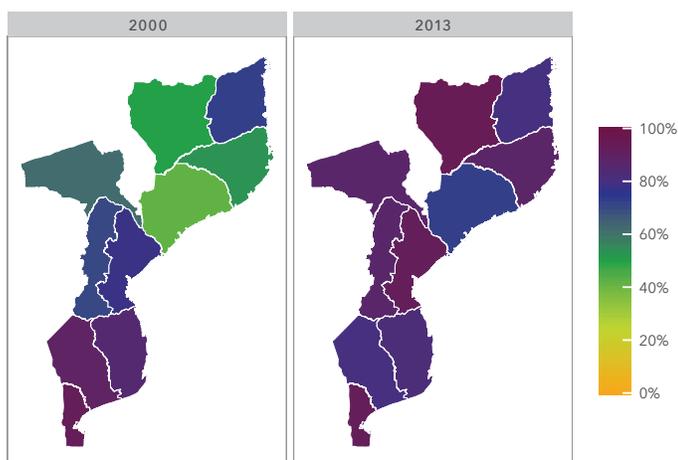
## Subnational estimates highlight trends over time since 2000.

The full 2014 Annual Dissemination Report provides provincial-level maps for 2000 and 2013 for all antigens.

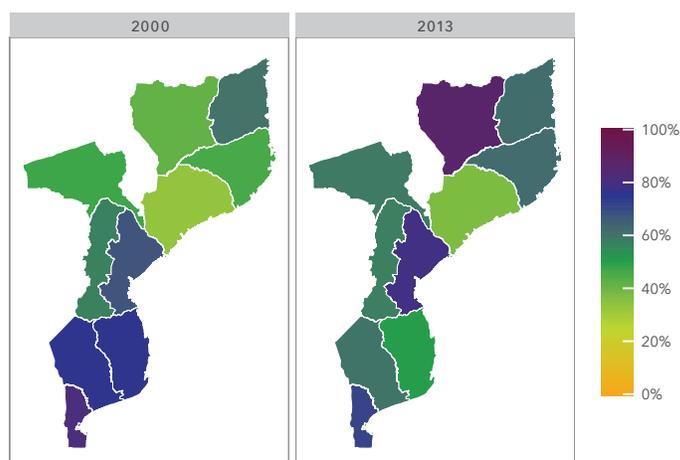
- Diphtheria, pertussis, tetanus vaccine (DPT3). Coverage in 2013 was above 70% for all provinces, with the highest levels of coverage in Maputo province in the south and Niassa in the north (Figure 1).

- Fully vaccinated child (received Bacillus Calmette-Guérin [BCG] vaccine, three doses of oral polio vaccine [OPV3], three doses of DPT, and measles vaccine). Coverage was notably lower in the Zambézia and Inhambane provinces and in Maputo city, with Maputo city coverage driven by low oral polio vaccination coverage (Figure 2).

**Figure 1:** Province-level DPT3 coverage, using small area estimation techniques



**Figure 2:** Province-level fully vaccinated child coverage, using small area estimation techniques

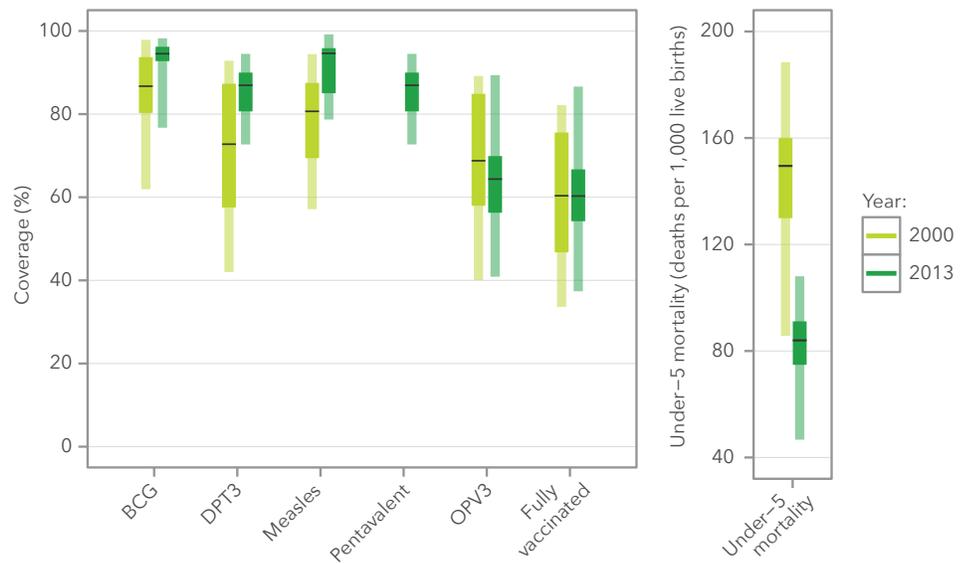


**Province-level estimates of vaccine coverage since 2000 across vaccine antigens show general improvement in geographical inequality but declines in coverage for oral polio vaccination.**

- The median level of coverage at the province level generally increased for BCG, DPT3, and measles vaccination, but coverage remained approximately the same for full vaccination, likely due to declines in coverage of polio vaccination since 2000 (Figure 3).
- Geographical inequality, denoted by the range and interquartile range, generally decreased over time, with the exception of OPV3 and full vaccination (Figure 3).

**Figure 3:** Distribution of the province-level vaccine coverage and under-5 mortality

The horizontal line represents the median across provinces. The thick vertical bar represents the interquartile range, while the thin vertical bar represents the range across provinces.

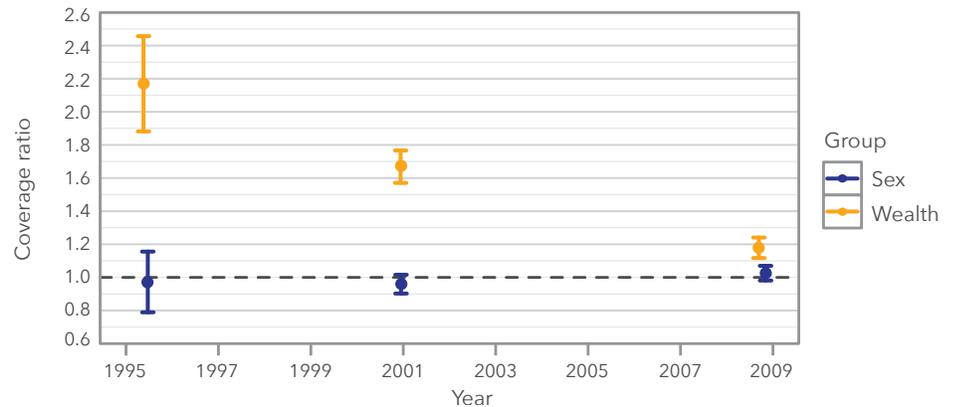


**There were reductions in the inequality of coverage by level of household wealth, but inequalities persist. Vaccine coverage was equal between males and females.**

- While the ratio of DPT3 coverage in the richest quintile compared to the poorest quintile declined over time, inequality by level of wealth remains (Figure 4).
- DPT3 coverage was approximately equal between males and females, indicated by a ratio of coverage consistently close to 1 (Figure 4).

**Figure 4:** Ratios of DPT3 coverage by sex and wealth

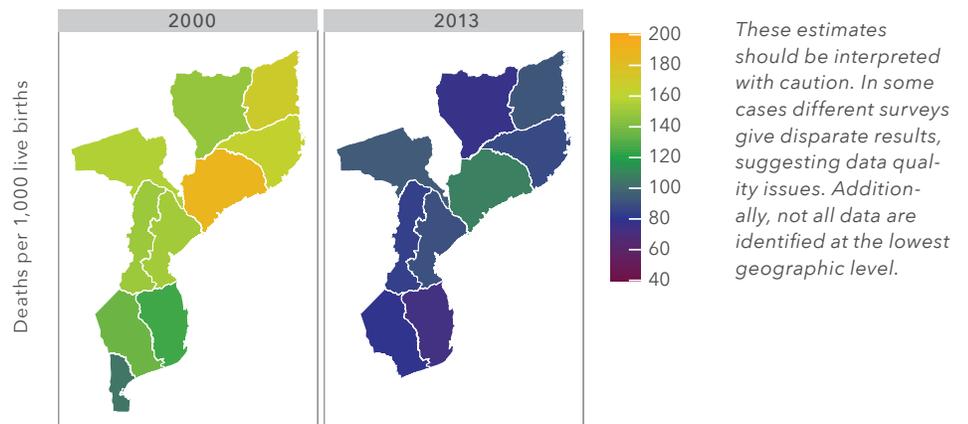
Wealth ratio is the ratio of DPT3 coverage in the richest quintile to coverage in the poorest quintile. Sex ratio is the ratio of DPT3 coverage in males versus females



**There are consistent and large declines in child mortality across all provinces.**

- Child mortality is highest in Zambézia province, which was also identified to have especially low coverage of full vaccination (Figure 2 and Figure 5).

**Figure 5:** Province-level under-5 mortality, using small area estimation techniques



# RESOURCES used for immunization

The FCE conducted a detailed resource tracking study in Mozambique in 2014 to estimate the total envelope of resources for immunization activities in 2013.

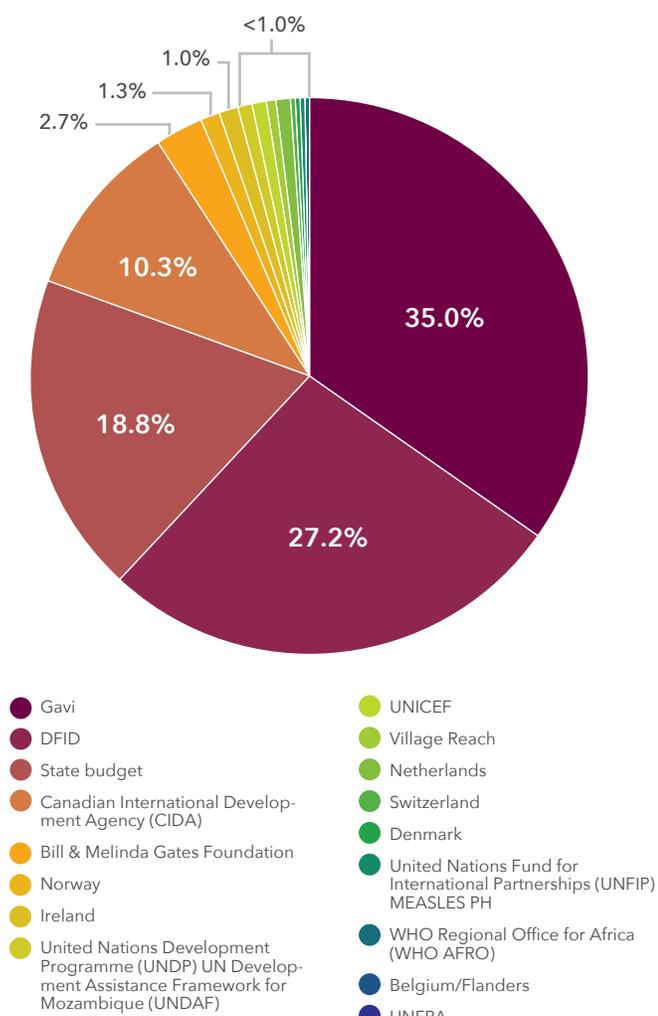
- The primary funding sources for immunization in Mozambique are Gavi, the United Kingdom's Department for International Development (DFID), and the state budget (government of Mozambique) (Figure 6).
- Using funds for immunization, ambulatory health care centers were the providers spending the majority of immunization funds in Mozambique (US\$17.8 million), followed by providers of public health programs mainly through

districts (US\$3.6 million) and providers of public health programs at the central level (US\$2.2 million).

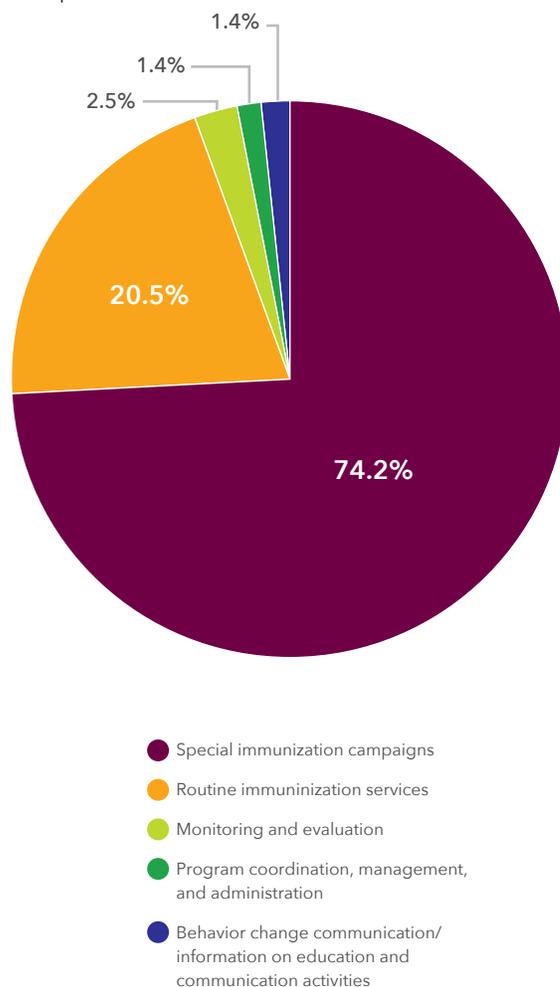
- The majority of funds were allocated toward special and routine immunization campaigns<sup>1</sup> (US\$17.5 million and US\$4.9 million, respectively) (Figure 7).
- External assistance tended to provide support for special immunization campaigns<sup>1</sup> while the government prioritized support to routine immunization activities. In line with this finding, more than 95% of Gavi funding supports special immunization campaigns.

<sup>1</sup>"Special immunization campaigns" refers to expenditures related to new vaccine introductions and campaigns, which include vaccines, materials, training, supervision, special radio spots, and all other activities undertaken during national campaigns.

**Figure 6:** Immunization funding sources for fiscal year 2013 in Mozambique



**Figure 7:** Total direct immunization funding by services (functions) in Mozambique, 2013



# ANALYSIS of major challenges and successes

We used a Root Cause Analysis (RCA) approach to identify the root causes of observed successes and failures.

- A “root cause” is a key factor in a causal chain of events that, if removed from the sequence, would prevent the final undesirable or desirable event from occurring or recurring.
- The RCA and accompanying diagrams were produced by testing assumptions against multiple data sources and through collective deliberation.

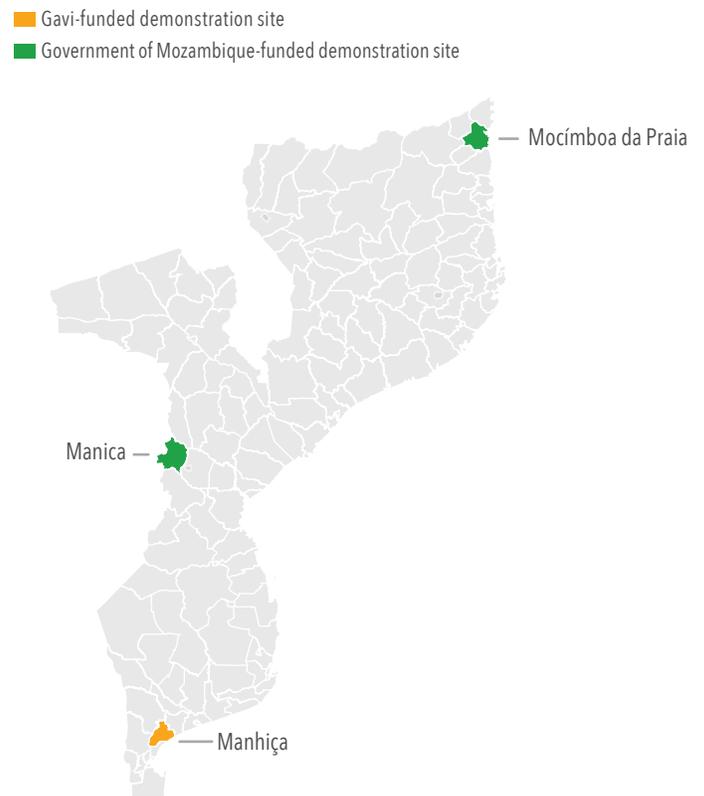
Each finding is accompanied by a ranking that reflects the robustness of evidence. The four-point ranking scale is summarized below:

Ranking	Rationale
A	The finding is supported by multiple data sources (good triangulation) which are generally of good quality. Where fewer data sources exist, the supporting evidence is more factual than subjective.
B	The finding is supported by multiple data sources (good triangulation) of lesser quality. Where fewer data sources of good quality support the finding (limited triangulation), the supporting evidence is perhaps more perception-based than factual.
C	The finding is supported by few data sources (limited triangulation) and is perception-based, or generally based on data that are considered to be of lesser quality.
D	The finding is supported by limited evidence (single source) or by incomplete or unreliable evidence. Findings with this ranking may be preliminary or emerging, with active and ongoing data collection to follow.

## HUMAN PAPILLOMAVIRUS vaccine demonstration project

The original human papillomavirus (HPV) vaccine demonstration application to Gavi, which proposed implementation in Manhiça, Manica, and Mocímboa da Praia, was not approved due to Gavi’s concerns about implementation capacity. However, the second HPV demonstration application targeted only Manhiça district and was approved in late January; the government of Mozambique later included Manica and Mocímboa da Praia in the demonstration project using its own funding. The school- and community-based demonstration was launched in May 2014.

HPV demonstration districts, Mozambique

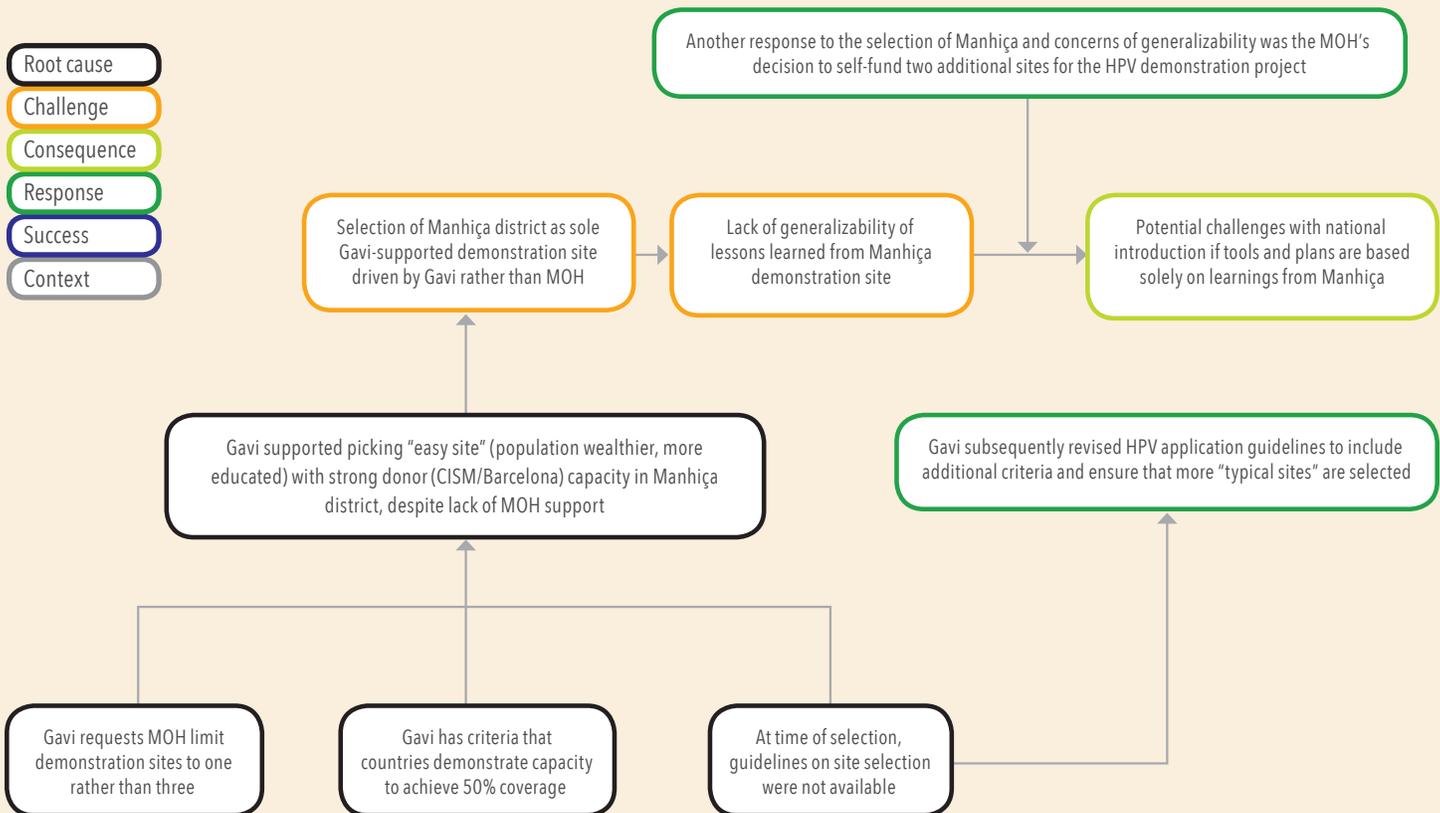


## FINDING 1

The district ultimately chosen as the Gavi-supported site for the HPV vaccine demonstration in Mozambique represents a district with relatively favorable implementation conditions that include strong partner support and comparatively higher socioeconomic conditions. The government of Mozambique's later decision to include and independently fund two additional HPV vaccine demonstration districts will likely lead to lessons learned that will be more applicable and result in tools and plans that are better adapted for national introduction.

### RCA for selection of HPV vaccine demonstration sites

Ranking: B



## RECOMMENDATION

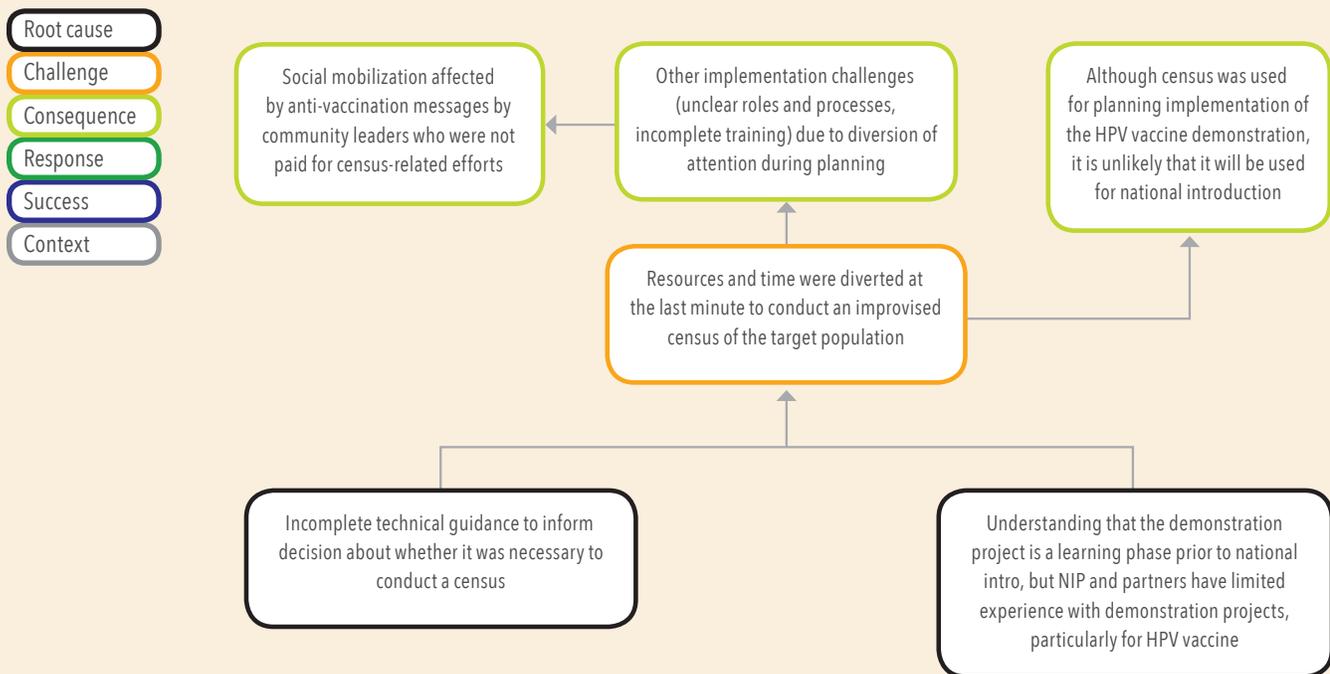
Gavi and country governments should continue to ensure that selection of demonstration sites maximizes the potential for a representative experience that may contribute to lessons learned for national introduction. This may include supporting multiple demonstration sites in a simultaneous or phased manner and/or encouraging co-financing of additional demonstration sites by country governments or other donors.

## FINDING 2

Insufficient technical guidance and underutilized technical assistance, coupled with the National Immunization Programme (NIP) and country-level partners' limited knowledge on implementing HPV vaccine demonstration projects led to the unsuccessful implementation of a target population census in the HPV vaccine demonstration sites, which was ultimately abandoned. The resources required to conduct the census resulted in a lack of attention being paid to other preparatory activities, which affected the quality of the HPV demonstration project.

### RCA for the affected quality of the HPV vaccine demonstration implementation

Ranking: B



## RECOMMENDATIONS

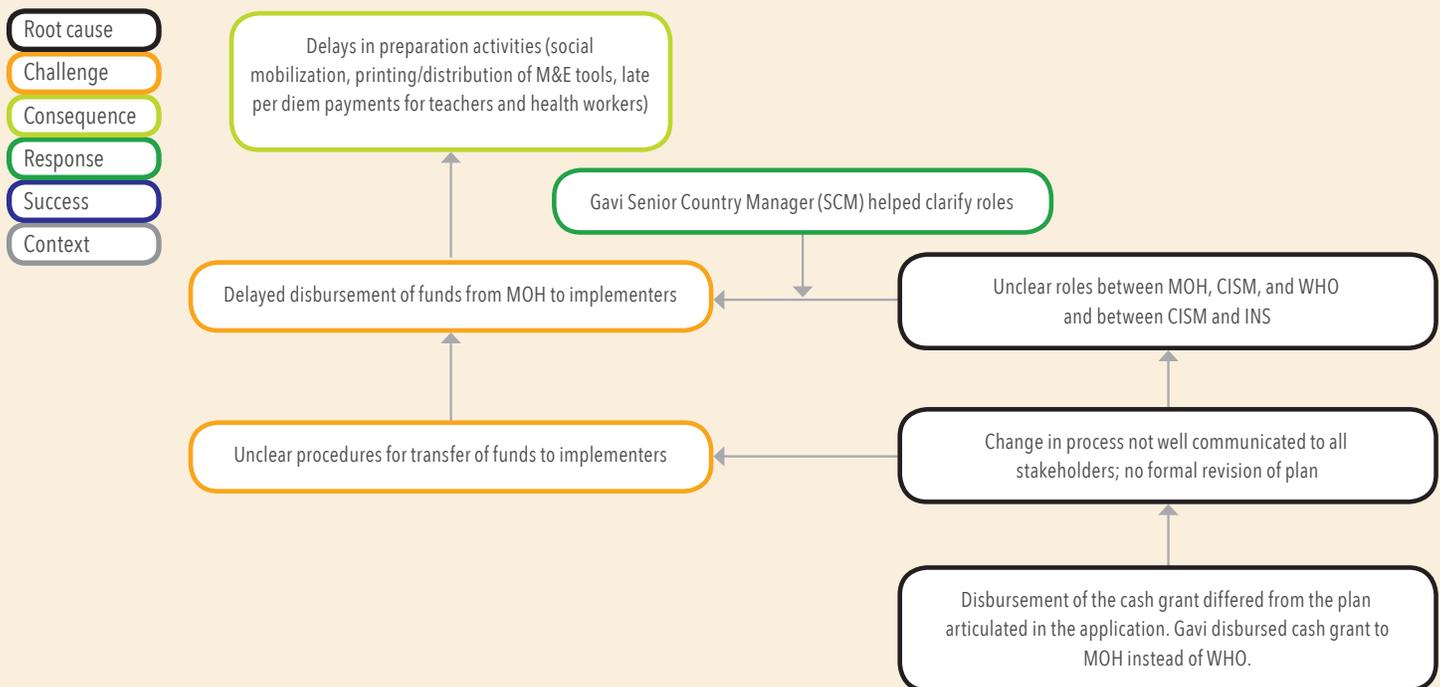
1. The Gavi Secretariat and partners should provide technical guidelines for HPV demonstration project implementation that include guidance on how demonstration activities relate to national rollout of HPV. Relatedly, in guidelines, the demonstrated ability criterion should be revised to more clearly emphasize demonstrated ability based on an average or representative site and conditional on development of a feasible delivery model for national introduction.
2. Partners and Gavi should ensure that sufficient technical guidance (guidelines, tools, and technical assistance) specific to HPV vaccine demonstration projects is available and accessible.

## FINDING 3

Funds were disbursed early from Gavi in response to lessons from Mozambique's experience with PCV. The disbursement entity, roles, and responsibilities of the NIP and partners changed, however, from what was stated in the approved application for the HPV vaccine demonstration project support in Mozambique. Even though these changes were positive because they better aligned with the purpose of the demonstration project, the changes were poorly communicated across all stakeholders and were not well planned. As a result there was confusion in roles and responsibilities and delayed in-country disbursement of funds to implementing agencies.

### RCA for the delay in funds disbursement to implementing agencies

Ranking: A



## RECOMMENDATIONS

1. The Gavi Secretariat should establish a formalized process for changes to implementation plans that occur after approval, including changes in designated roles and funding recipients. Country governments, country-level partners, and the Gavi Secretariat should ensure that changes in these roles are communicated to all relevant parties.
2. Gavi should continue to ensure that the leading implementer for demonstration is the MOH if they will be the main implementer for national introduction.

# HEALTH SYSTEM Strengthening

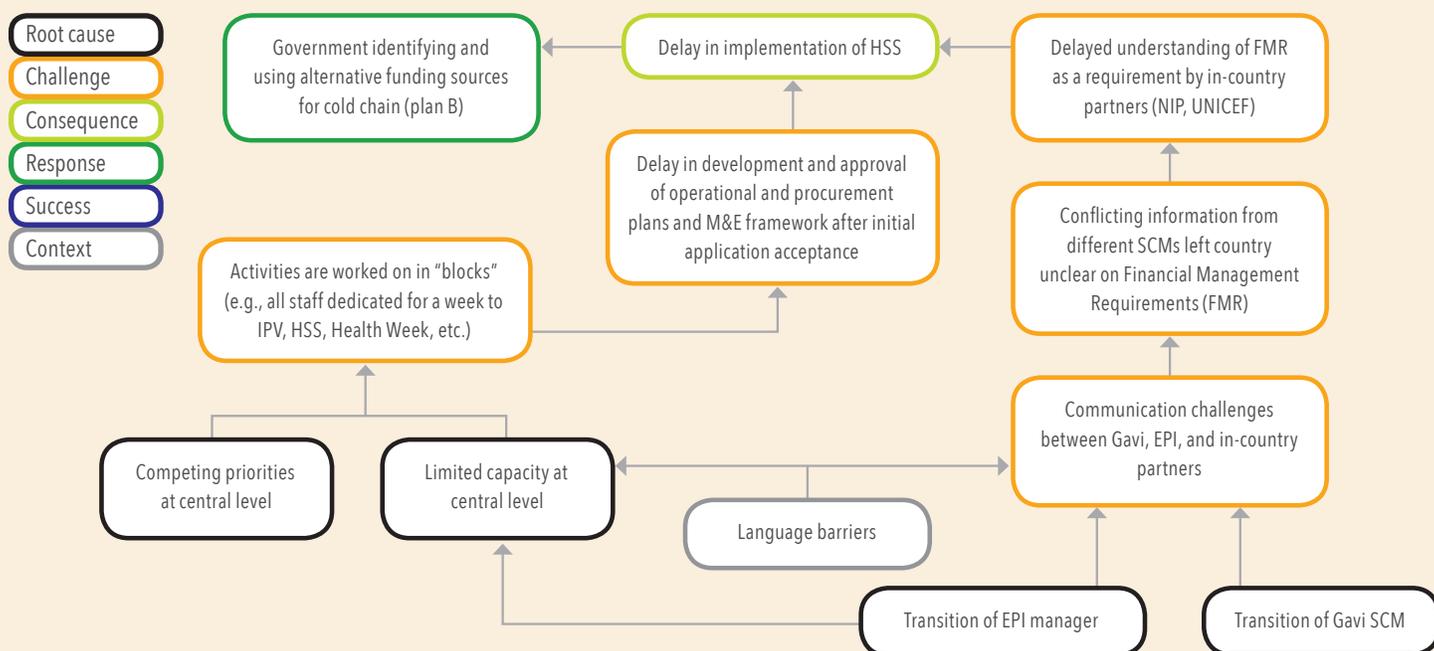
Mozambique's third health system strengthening (HSS) application was approved in August 2013, and implementation was set to begin in the first quarter of 2015.

## FINDING 1

Communication challenges between the NIP and Gavi Secretariat, coupled with competing priorities and staff turnover at NIP and Gavi, led to submission delays in the development of key Gavi HSS conditionalities (Year 1 OP and Monitoring and Evaluation [M&E] framework) and the startup of HSS support in Mozambique.

### RCA for the delayed implementation of HSS

Ranking: B



## RECOMMENDATIONS

1. In countries with limited central capacity and/or other important implementation bottlenecks, country governments, partners, and Gavi should more carefully consider whether implementing multiple support streams is feasible. For Mozambique, this extends to a reassessment of the feasibility of current plans to introduce rotavirus vaccine, measles second dose vaccine, and IPV in 2015 alongside the ongoing implementation of the HPV vaccine demonstration project and the expected startup of HSS.
2. Country governments, partners, and Gavi should consider strengthening central capacity and additional technical support to allow countries to manage and implement multiple support streams. This could be implemented through the existing HSS support stream.
3. Gavi should improve communication by jointly developing explicit communication norms, roles, and expectations of NIP/MOH managers, key alliance partners (e.g., UNICEF, WHO), and the Gavi Secretariat, through written and mutually agreed-upon terms of reference. This should include alternate designees to limit the problem of staff turnover.

# PNEUMOCOCCAL conjugate vaccine

Mozambique introduced the 10-valent pneumococcal conjugate vaccine (PCV) as part of its routine immunization program in April 2013 with support from Gavi. The introduction consisted of a nationwide launch that included all health facilities providing immunization services. During 2014, the FCE team targeted its evaluation on PCV's integration into the routine system.

## Launch

- One of the major challenges faced during the PCV introduction was the delay in rolling out the updated NIP monitoring and evaluation tools.
- Further delay was also observed in the inclusion of PCV data in the electronic Health Management Information System (HMIS), where PCV data were not entered reliably until the end of 2013.

## Routinization

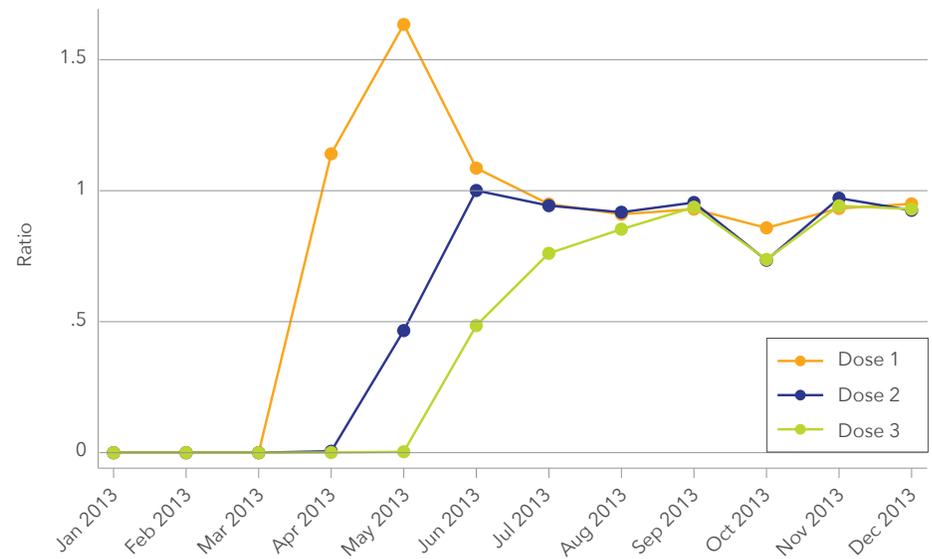
- The national PCV-to-pentavalent coverage ratios in Figure 9 show that, though PCV routinization has progressed, it was not complete as of December 2013. There were issues with data quality among the NIP and HMIS reporting systems, as missing values are present in both.
- District-level routinization of PCV generally followed provincial findings, with some districts starting earlier or later than others within provinces. Many districts reported more PCV doses administered than pentavalent vaccine, indicating a period of “catch-up” (Figure 8).

## Coverage

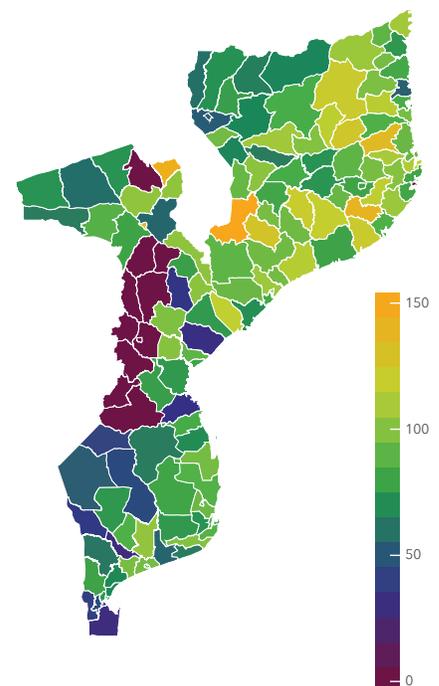
- According to the HMIS data, national coverage of the third dose of PCV reached 83.6% by February 2014.
- HMIS data are difficult to interpret, due to uncertainty in the denominator (health facility target for PCV), followed by incomplete reporting from all facilities. Anomalies are clear from the map (Figure 9), including a number of districts with coverage greater than 100% and many with coverage of zero. To accurately estimate PCV coverage, alternative sources of data are required, at least to supplement HMIS and the NIP parallel system.

**Figure 8:** National ratio of PCV to pentavalent vaccine coverage, computed from NIP parallel reporting system with data from the HMIS used to supplement missing provinces and months

A ratio of 1 indicates that PCV has the same coverage as pentavalent vaccine within the present birth cohort of children.



**Figure 9:** District PCV-to-pentavalent ratio, based on the NIP parallel reporting system and HMIS, February 2014



# UPCOMING areas of evaluation

## Inactivated polio vaccine

Taking advantage of the Gavi Board's 2013 decision to support the introduction of inactivated polio vaccine (IPV) as part of routine immunization programs, the government of Mozambique applied to Gavi for IPV support in 2014, planning to introduce the vaccine in 2015.

The proposal writing group was composed of the three main key stakeholders: NIP, WHO, and UNICEF. The Interagency Coordinating Committee, led by the Mozambique National Director of Public Health, included Village Reach and the Foundation for Community Development; it endorsed the application proposal prior to submission. In June 2014, WHO Regional Office for Africa (WHO AFRO) provided technical assistance on the IPV application at a regional meeting held to guide countries in the IPV proposal development process.

## Rotavirus vaccine and measles second dose

The government of Mozambique submitted the first combined rotavirus vaccine and measles second dose (MSD) application to Gavi in 2012. Due to a number of weaknesses in the application, Gavi did not approve this application, instead requesting that the country resubmit an application addressing key issues raised by the Independent Review Committee. In January 2014, the country submitted a new application that proposed introduction in 2015 and detailed a plan for a nationwide simultaneous introduction of the two vaccines. This application was approved. Rotavirus vaccine and MSD launch planning activities at NIP central level started in the first quarter of 2015.

# CROSS-STREAM

## findings for Mozambique

### Limited central capacity and competing priorities in the context of multiple support streams

- Given the heavy workload of the small, 12-person central NIP team that manages all NIP activities, including all new streams of funding from Gavi, it is challenging to manage planning and timely implementation for multiple streams of Gavi support.

The concurrent implementation of HPV and HSS funding streams, in parallel to the management of a new application for IPV, resulted in prioritization of some funding streams at the expense of others, with the HPV vaccine demonstration project and the IPV application prioritized over HSS.

In the context of the challenges faced with implementing multiple support streams in 2014, we strongly recommend a reassessment of the timeline for 2015, given the current plan to introduce three new vaccines alongside ongoing streams of support

### Suboptimal communication between the NIP, country-level partners, and Gavi Secretariat

- Across Gavi streams of support we identified critical communication challenges between the NIP, country-level partners, and the Gavi Secretariat that led to delays and rushed implementation.

- These challenges occurred within a context of frequent key position turnover of both the NIP manager and Gavi Senior Country Manager (SCM). Of note, key informants reported that the SCM transition, which occurred twice in a single year, was not formally communicated.
- The Gavi Secretariat and government of Mozambique should enact measures to limit communication gaps that occur from position turnover. In the case of the SCM, avoiding high levels of turnover and clearly communicating any transitions in staffing will reduce potential for communication challenges.

### Partner engagement and technical assistance

- Interviews with key informants indicate that although the Gavi Secretariat provided key technical assistance with the development of the HPV demonstration application through a consultant, there was a lack of clear guidance on HPV vaccine introduction from WHO.
- Additionally, there were delays in the MOH's response to offers of assistance for planning and preparation for the HPV vaccine by a new partner; this was perceived to stem from a lack of trust for this new partner.
- Gavi and the government of Mozambique should further investigate the underlying barriers to effective partnership and provision of technical assistance.

# CONCLUSIONS

**Gavi support to introduce new vaccines in Mozambique is beneficial and generally well-administered.**

- In the last two years, Gavi has supported national introduction of PCV, which is now largely routinized in the routine EPI system.
- The HPV vaccine demonstration project is contributing to learnings for the eventual national HPV vaccine introduction.
- The NIP and partners will begin to implement a range of activities with HSS, aiming to increase coverage, reduce inequity, and support future new vaccine introductions.
- In the context of these successes, there are a number of challenges noted in the 2014 evaluation period.

**Communication must be strengthened to ensure that Gavi Secretariat, partners, the MOH, and other stakeholders are able to better coordinate efforts and utilize resources dedicated to immunization services.**

- Communication norms between the Gavi Secretariat, the MOH, and partners (such as in-country UNICEF and WHO) are not clear to all parties.
- Communication is also impeded by a lack of clarity and consensus on roles and responsibilities pertaining to Gavi-supported activities. In particular, the Gavi Business Plan and the roles of UNICEF and WHO as the technical partners of Gavi are not universally understood by all Mozambican stakeholders, further muddling decision-making and slowing efforts.
- These challenges are exacerbated by turnover of key staff at both the Gavi Secretariat and the MOH and by the lack of Gavi Secretariat personnel with Portuguese language capacity. Despite these challenges, there is substantial goodwill from all parties and multiple instances highlighting supportive, collaborative efforts.

**Challenges with technical guidance hindered efforts to ensure smooth, uninterrupted implementation of the HPV vaccine demonstration project.**

- Providing technical guidance documents specific to the demonstration project would allow countries to better understand the objective of the demonstration project and how the implementation process relates to eventual national introduction.

**Underlying data quality issues were a major challenge in the HPV implementation of the census.**

- These data quality issues were shared by the PCV funding streams and contributed to difficulty developing an M&E framework for HSS.

**Positive and negative unintended consequences of Gavi support**

**Weaknesses of the health system were laid bare by the introduction of new vaccines.**

- The cold chain was not intact and had to be improved in order to add new vaccines.
- Limited human resources for health, specifically in management roles at the central level, are restricting the country's ability to effectively plan, execute, and manage the expanding program.
- The monitoring and evaluation system for immunization is weak, and HMIS data are difficult to use for essential monitoring and planning activities.
- These identified challenges are subsequently targeted as part of the upcoming HSS grant.

**The limited management capacity at the central level is creating challenges in the management of multiple Gavi support streams.**

- Turnover of key personnel is common at the MOH, and management of Gavi support is often the responsibility of newly appointed managers. Clearer and more coordinated efforts to plan multiple Gavi support streams in this context are needed.
- Although the Independent Review Committee has noted the importance of prioritizing the HSS implementation, this prioritization has yet to manifest in Mozambique.
- Furthermore, with multiple introductions planned for 2015, Gavi and the government of Mozambique should explicitly assess the capacity of Mozambique and partners to implement this large portfolio of work.

**Increased priority given to the new Gavi support window for IPV impacted multiple streams of Gavi support.**

- The limited timeframe for application and implementation of IPV, coupled with central capacity constraints, contributed to slow progress in the implementation of the HSS support stream.

# TIMELINE of major immunization events in Mozambique

2012

AUG Training of Trainers (TOT) conducted at central National Immunization Programme (NIP) and in provinces; fridge stickers placed

SEPT First application for three districts failed

OCT

NOV

DEC PCV arrived in country Second application for only Manhiça district submitted

2013

JAN Advocacy events and weekly Technical Working Group (TWG) meetings initiated; TOT (district) and social mobilization implemented

FEB PCV distribution to provinces began

MAR

APR PCV launched; central-level supervision (except Maputo province) HPV demo application approved for one district

MAY

JUN PCV monitoring tools distributed

JUL HSS application approved by Gavi after two prior applications failed

AUG HPV TWG met for launch planning

SEPT Gavi requested Monitoring and Evaluation (M&E) performance framework, Year 1 procurement and operational plan Ministry of Health (MOH) received Gavi demonstration cash grant

OCT

NOV PCV Post Introduction Evaluation (PIE) Manica and Mocímboa da Praia districts were added, using non-Gavi funds

DEC HPV vaccine demonstration application submitted

2014

JAN NIP first workshop held to finalize HSS operational plan MOH received Gavi-funded vaccines planned for Manhiça; TOT for health and education providers implemented

FEB

MAR Transition of Expanded Program on Immunization (EPI) managers Gavi vaccines were used for the two other districts due to supply delays may have delayed HSS process; NIP second workshop held to finalize three pending documents

APR District implementers started training; social mobilization began

MAY First campaign: HPV demo launched in all three districts; MOH received vaccines planned for Manica and Mocímboa da Praia

JUN Interagency Coordinating Committee (ICC) met to approve the three HSS key documents; transition of Gavi Supply Chain Manager (SCM) may have delayed prompt feedback Second campaign: HPV launched

JUL MOH requested Gavi clarification on how to spend HSS funds for customs clearance

AUG Gavi clarified that it was clear from the agreement that customs clearance costs were under MOH; Gavi requested banking details, which were delayed from central bank

SEPT

OCT NIP submitted the operational and procurement plans (due to start in the first quarter of 2015) Third campaign: HPV PIE

NOV IPV application approved by Independent Review Committee HSS plan accepted by Gavi VIG plan accepted by Gavi

DEC Gavi Secretariat requests formal agreement by government of Mozambique (GOM) for the terms and conditions of FMR; GOM suggests changes; disbursement of HSS and VIG funds shifted to 2015

## Streams of support evaluated in 2014

- Implementation of pneumococcal conjugate vaccine (PCV)
- Human papillomavirus (HPV) vaccine demonstration
- Cash-based support through Health System Strengthening (HSS)
- Inactivated polio vaccine (IPV)
- Not vaccine-specific



