Gavi Full Country Evaluations

2015 Annual Dissemination Report

Bangladesh Report

Acknowledgments

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Evaluation Team

This report presents findings from the 2015 Gavi Full Country Evaluations (FCE). It was prepared by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington (UW) in collaboration with members of the FCE Team: icddr,b in Bangladesh; and Program for Appropriate Technology in Health (PATH), United States.

This work is intended to inform evidence-based improvements for immunization delivery in FCE countries, and more broadly, in 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 Evaluations Team.

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Acronyms

AEFI	Adverse event following immunization
CBHC	Community Based Health Care
CC	Community Clinics
CMCH&IW	Community Maternal and Child Health and Immunization Worker
CSO	Civil Society Organization
DAH	Development assistance for health
DGHS	Directorate General of Health Services
DMCH&IO	District maternal, child health and immunization officer
EOI	Expression of Interest
ESD	Essential Service Delivery
FCE	Full Country Evaluations
FCI	Fact-checking interviews
FGD	Focus Group Discussion
FMA	Financial management assessment
GDP	Gross domestic product
GoB	Government of Bangladesh
GPEI	Global Polio Eradication Initiative
HED	Health Engineering Department
HFA	Health Facility Assessment
HFS	Health facility survey
Hib	*Haemophilus influenzae* type B vaccine
HMIS	Health management information system
HNPSP	Health Nutrition and Population Sector Program
HPNSDP	Health, population, nutrition, and sector development program
HPV	Human papillomavirus vaccine
HSS	Health System Strengthening
ICC	Interagency coordination committee
IPV	Inactivated Polio Vaccine
IRC	Independent Review Committee
ISS	Immunization Services Support
JA	Joint Appraisal
KII	Key informant interview
LCG	Local consultative group
M&E	Monitoring and Evaluation
MNC&AH	Maternal, Neonatal, Child, and Adolescent Health
MNCH	Maternal, newborn, and child health
MoE	Ministry of Education
MoH	Ministry of Health
MoHFW	Ministry of Health and Family Welfare
MSD	Measles second dose
NC	National Coordinator
NVS	New vaccine support
OP	Operational plan
PCV	Pneumococcal conjugate vaccine
PCV10	10-valent pneumococcal conjugate vaccine
PEF	Partner Engagement Framework

PFM	Public financial management
PIC	Program implementation committee
PIP	Program implementation plan
RCA	Root Cause Analysis
RCHCIB	Revitalization of Community Health Care Initiative in Bangladesh
SMO	Surveillance Medical Officer
SNA	Social network analysis
SoE	Statement of expenditure
SWPMM	Sector Wide Program Management and Monitoring
SWAp	Sector Wide Approach
TA	Technical assistance
TAG	Technical Advisory Group
TAP	Transparency and Accountability Policy
TOC	Theory of change
TSC	Technical Sub Committee
UH&FPO	Upazila Health & Family Planning Officer
VIG	Vaccine Introduction Grant

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		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 Bangladesh report include:

- Process tracking based on document review, observation, and fact-checking interviews;
- Root-cause analysis to identify underlying causes of identified challenges and successes;
- In-depth analysis of the process using key informant interviews (KII), focus group discussion (FGD), and social network analysis (SNA);
- Analysis of Health Management Information Systems (HMIS) to understand the rollout of new vaccine introductions;
- A health facility survey including observation at facilities with continuous measurement of cold-chain temperatures and patient exit interviews (Annex 13).
- Analysis of secondary data to generate small-area estimates of vaccine coverage and child mortality at subnational levels (Annex 6); and
- 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).

Summary of Bangladesh Findings

Pneumococcal conjugate vaccine (PCV) and Inactivated polio vaccine (IPV)

1. The joint introduction of PCV and IPV was a function of strong commitment of EPI personnel in completing training and advocacy within a short period and timely support from the partners, despite a number of challenges (delayed training, missed opportunity to integrate preparatory activities). While preliminary findings suggest that first and second PCV has been rapidly scaled up, delivery of third-dose PCV and IPV notably lagged behind.

2. The PCV readiness assessment was completed successfully and largely as planned in spite of delayed training activities and political unrest that restricted access by WHO to upazila-level facilities for the assessment. This was facilitated by reminders and guidance from the Gavi Secretariat and UNICEF to the EPI.

3. Timely responses from midlevel managers helped to overcome challenges related to delayed fund disbursement from the central level to the subnational level for IPV orientation training.

4. The country experienced challenges in successfully integrating IPV vaccine into routine EPI due to a shortage of IPV vaccines at all levels about six months after introduction. This was the result of higher than estimated wastage of the five-dose presentation of IPV and inaccurate subnational target population data when determining supply needs, later mitigated this by implementing a multi-dose vial policy.

Human papillomavirus (HPV) vaccine

1. The first rescheduled date for the HPV vaccine demonstration project was chosen with limited coordination with the Ministry of Education, leading to a date that was incompatible with the school year. The proposed date of February 2016 was chosen accounting for the school calendar

and the workload associated with the PCV and IPV introductions. However, considering the availability of HPV vaccine with appropriate expiry, the EPI HQ deferred the HPV vaccine demonstration program for two months to April 2016.

2. The selection of the district for the HPV vaccine demonstration project was based largely on characteristics that would facilitate learning for national introduction. Our emerging findings suggest that the selection of the school-based delivery model was not based on a complete understanding of the importance of financial sustainability or a comprehensive understanding of the experience of HPV vaccine delivery in other countries.

Health system strengthening (HSS)

1. Comprehensive and prompt reprogramming accelerated the implementation of HSS-1 activities.

2. Delays in fund disbursement from Gavi to the country were experienced over the course of the HSS-1 grant. There was a two-year delay in disbursing the first tranche of funds for HSS implementation due to the protracted period required to complete the newly introduced Financial Management Assessment. The second tranche of HSS funds was also delayed due to delayed completion of external audit report requirements.

3. Funds were not disbursed to the implementers of HSS-1 grant activities due to the transition between the second Sector Wide Approach (SWAp) to the third SWAp, which led to a restructuring of HSS grant activities from one Operational Plan to three Operational Plans.

4. Completion of recruitment under HSS-1 grant took longer than planned due to lengthy recruitment process and high staff turnover

5. Infrastructure development activities were delayed due to a range of root causes, including lower priority given to a small volume of work by the Health Engineering Department (HED), limited coordination between HED and HSS implementers, and challenges associated with construction including a lengthy bidding process and difficulties in implementation in hard-to-reach areas.

6. The absence of a monitoring and evaluation framework in the HSS 1 proposal format hindered the implementation of HSS-1 grant. Despite availability of a timeline for implementation, there was insufficient detail regarding the party responsible for implementing each of this activity.

7. Observational data suggest that immunization coverage has improved more rapidly in Gavi HSS-1 districts, particularly Phase I districts, in comparison to non-HSS districts.

8. The application for Gavi HSS-2 support involved a broad group of stakeholders in the design of the proposal. Despite this, after receiving the initial application in January, the IRC asked for a resubmission. The root causes of this were a short preparation period, inadequate technical assistance, and insufficient consideration of alignment with national health plans. The resubmitted proposal focused on two activities (EVM and surveillance supported by WHO and UNICEF).

Cross-stream analysis

1. There was strong adaptive management capacity of the EPI in handling challenges regarding repeated scheduling in the joint launch of PCV and IPV as well as the decision to postpone HPV vaccine demonstration.

2. While technical assistance and partnership have been strong for new vaccine introductions, our findings suggest that technical assistance for HSS has been more limited.

Recommendations

For each finding described above, we developed related recommendation(s). Table 2 summarizes the recommendations for Bangladesh. 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.

Table 2: Findings and recommendations

Bangladesh	
Findings	**Recommendations**
Pneumococcal conjugate vaccine	
Finding 1. The joint introduction of PCV and IPV was a function of strong commitment of EPI personnel in completing training and advocacy within a short period and timely support from the partners, despite a number of challenges (delayed training, missed opportunity to integrate preparatory activities). While preliminary findings suggest that first and second PCV has been rapidly scaled up, delivery of third-dose PCV and IPV notably lagged behind.	1. Gavi should maintain periodic meetings or monthly conversation with the country stakeholders, including the Government of Bangladesh (GoB) and EPI traditional partners, regarding the country's vaccine needs and its availability in the global market, through the period of application development to the introduction phase. 2. The country should maintain closer communication with Gavi to remain informed of details about availability of vaccines and decision letters so that they can better plan to avail mixed opportunity for integration of introduction multiple vaccines. 3. Based on the less-than-full routinization of third-dose PCV, a review should be conducted of the appropriateness of the additional visit of third-dose PCV at 18 weeks, taking into account demand side considerations, e.g. caregiver preferences, and vaccine coverage.
Finding 2. The PCV readiness assessment was completed successfully and largely as planned in spite of delayed training activities and political unrest that restricted access by WHO to upazila-level facilities for the assessment. This was	1. Gavi and partners should continue to ensure robust communication, as was the case in Bangladesh, about the rationale and procedure for the PCV readiness assessment.

facilitated by reminders and guidance from the Gavi Secretariat and UNICEF to the EPI.	
Finding 3. Timely responses from midlevel managers helped to overcome challenges related to delayed fund disbursement from the central level to the subnational level for IPV orientation training.	1. During the planning phase, the GoB should give more consideration to the time needed to ensure that the budgetary provision aligns with the national health plan (e.g., cMYP). These issues should be resolved prior to the process of submitting an EOI to Gavi.
Finding 4. The country experienced challenges in successfully integrating IPV vaccine into routine EPI due to a shortage of IPV vaccines at all levels about six months after introduction. This was the result of higher than estimated wastage of the five-dose presentation of IPV and inaccurate subnational target population data when determining supply needs, later mitigated this by implementing a multi-dose vial policy.	1. Investments in data and methods are required to improve forecasting of vaccine wastage and accompanying supply to avoid stock-outs as experienced in the introduction of IPV in Bangladesh.
Human papillomavirus vaccine	
Finding 1. The first rescheduled date for the HPV vaccine demonstration project was chosen with limited coordination with the Ministry of Education, leading to a date that was incompatible with the school year. The proposed date of February 2016 was chosen accounting for the school calendar and the workload associated with the PCV and IPV introductions. However, considering the availability of HPV vaccine with appropriate expiry, the EPI HQ deferred the HPV vaccine demonstration program for two months to April 2016.	

Finding 2. The selection of the district for the HPV vaccine demonstration project was based largely on characteristics that would facilitate learning for national introduction. Our emerging findings suggest that the selection of the school-based delivery model was not based on a complete understanding of the importance of financial sustainability or a comprehensive understanding of the experience of HPV vaccine delivery in other countries.	1. As the demonstration project proceeds, the government and partners should ensure an early assessment of financial sustainability of the chosen delivery model, and consider testing other delivery models (Exclusively through routine EPI sites; and exclusively through school/educational institutions) over the course of the two-year demonstration project 2. Gavi and partners should provide earlier and more comprehensive technical assistance in the design phase of HPV vaccine demonstration projects, including sharing other country experiences, to guide delivery model choices.
Health system strengthening	
Finding 1. Comprehensive and prompt reprogramming accelerated the implementation of HSS-1 activities	1. Early communication and corresponding support between Gavi, partners, and countries should accompany the recent 2016 guideline revision to more clearly outline the time required for HSS processes such as the FMA.
Finding 2. Delays in fund disbursement from Gavi to the country were experienced over the course of the HSS-1 grant. There was a two-year delay in disbursing the first tranche of funds for HSS implementation due to the protracted period required to complete the newly introduced Financial Management Assessment. The second tranche of HSS funds was also delayed due to delayed completion of external audit report requirements.	
Finding 3. Funds were not disbursed to the implementers of HSS-1 grant activities due to the transition between the second Sector Wide Approach (SWAp) to the third SWAp, which led to a restructuring of HSS grant activities from one Operational Plan to three Operational Plans.	1. Gavi Secretariat, partners and country stakeholders should begin dialogue prior to the application phase to ensure the submitted proposals are aligned with national health plans. This should be reviewed on an annual basis and contingencies planned for in instances where there is delayed implementation, such as the delayed fund disbursement arising from the FMA process in Bangladesh.

Finding 4. Completion of recruitment under HSS-1 grant took longer than planned due to lengthy recruitment process and high staff turnover	1. There should be enhanced dialogue, beyond guidelines, between country governments, partners, and the Gavi Secretariat to ensure that HSS operational plans and timelines accurately reflect the time required for required Gavi and in-country processes. 2. To avoid shortage of human resources under Gavi support, country should establish waiting lists for staff during recruitment process.
Finding 5. Infrastructure development activities were delayed due to a range of root causes, including lower priority given to a small volume of work by the Health Engineering Department (HED), limited coordination between HED and HSS implementers, and challenges associated with construction including a lengthy bidding process and difficulties in implementation in hard-to-reach areas.	1. As evidenced by the positive effect of a new leadership, strong coordination and leadership are necessary for implementation of HSS grants given the diverse parties involved in implementation. This should be planned for as part of HSS grant designs.
Finding 6. The absence of a monitoring and evaluation framework in the HSS 1 proposal format hindered the implementation of HSS-1 grant. Despite availability of a timeline for implementation, there was insufficient detail regarding the party responsible for implementing each of this activity.	1. Our findings support the requirement that new HSS applications include a monitoring and evaluation framework and plan to support assessment of the HSS grant. This should be accompanied by appropriate investments in human resources and logistics such as vehicle, supervisory checklists, computer, printers, and internet connectivity (modem) to support high-quality M&E.
Finding 7. Observational data suggest that immunization coverage has improved more rapidly in Gavi HSS-1 districts, particularly Phase I districts, in comparison to non-HSS districts. .	1. Continued evaluation and a more comprehensive understanding of why coverage has improved in some HSS districts and not other HSS districts will help to inform future implementation of Gavi HSS grants as well as other system strengthening activities.
Finding 8. The application for Gavi HSS-2 support involved a broad group of stakeholders in the design of the proposal. Despite this, after receiving the initial application in January, the IRC asked for a resubmission. The root causes of this were a short preparation period, inadequate technical assistance, and insufficient	1. As much as possible, countries should take a lead role in designing the HSS grant application. This would be facilitated by ensuring adequate preparation time for the development of HSS applications, noting the short time period available for the initial HSS application.

consideration of alignment with national health plans. The resubmitted proposal focused on two activities (EVM and surveillance supported by WHO and UNICEF).	2. Where technical assistance is required, countries, Gavi, and partners should prioritize hiring of local consultants for better understanding of country context in developing the application instead. Orientation for local consultants around Gavi procedures is a critical element. Where external technical assistance is required, adequate time for consultation and orientation of country context should be built into application development plans.
Cross-stream analysis	
Finding 1. There was strong adaptive management capacity of the EPI in handling challenges regarding repeated scheduling in the joint launch of PCV and IPV as well as the decision to postpone HPV vaccine demonstration.	1. The success of the Bangladesh EPI in adaptively managing the MR campaign and PCV/IPV introductions highlights the important of investing in and maintaining management capacity at multiple levels of the immunization system.
Finding 2. While technical assistance and partnership have been strong for new vaccine introductions, our findings suggest that technical assistance for HSS has been more limited.	1. Lessons can be learned from the provision of TA from new vaccine introductions for HSS and other more complicated streams of support. A focus of TA should be on building capacity of EPIs to successfully introduce new vaccines and to strengthen systems through Gavi's HSS grant. EPI could benefit from an assessment of its strengths and weakness in application design to determine where to build capacity for designing and preparing the HSS application as well as implementation of the grant. 2. Following from the first recommendation, EPI should take the lead in all aspects of the HSS grant application process and prioritize technical assistance from within the government or by in-country TA providers who are familiar with the country context and the health system. Internal technical assistance would likely strengthen the application design and local capacity, while also fostering country ownership of preparation process. 3. Proactive and early planning on the part of EPI stakeholders could help to establish if and where external technical assistance is needed, to identify and recruit potential providers in a timely fashion and arrange orientation sessions to familiarize them with the country context. External TA

	providers could also be twinned with local TA providers as a way to mutually build capacity.

Contents

Summary of Gavi support

Bangladesh first received Gavi support in 2001. Among the various antigens offered in the routine immunization system, Bangladesh has, with Gavi support, introduced monovalent hepatitis B vaccine into its childhood vaccination schedule under routine EPI in 2003, replaced DPT and monovalent hepatitis B vaccines with pentavalent vaccine (DPT, hepatitis B, and *Haemophilus influenzae* type B [Hib] vaccines) in 2009, and introduced measles second dose (MSD) into its routine EPI for 15-month-old children in 2012. With its own funds, the government of Bangladesh (GoB) incorporated MR vaccine into its routine childhood vaccination schedule. IPV was introduced nationally in March of 2015 through a joint launch with PCV. Additionally, the country planned an HPV vaccine demonstration in select districts to start in early 2015, which was postponed to 2016. Bangladesh also received immunization services support (ISS) in 2001, 2003-2007, and 2010; Injection Safety Support (INS) from 2004-2006; and HSS support in 2009 and 2014.

Table 3. Overview of Gavi support in Bangladesh

Gavi support	Period of funding	Total amount of funding (US$)
Pneumococcal conjugate vaccine (PCV)	2014-2016	79,491,000
Pentavalent vaccine	2009-2015	198,996,750
Human papillomavirus (HPV) vaccine demonstration project	2015-2016	734,000
HPV vaccine demonstration cash support	2015-2016	358,500
Measles second dose (MSD)	2012-2016	9,116,538
Measles-rubella (MR) vaccine campaign	2013	35,781,812
MR vaccine, operational costs	2013	33,586,500
Inactivated polio vaccine (IPV)	2015-2016	18,859,500
Hep B monovalent	2002-2008	20,224,465
Health System Strengthening (HSS)	2009-2014 (with new application submitted in September 2015)	13,671,500
Immunization services support (ISS)	2001-2004, 2006, 2009	23,340,200
Injection safety support (INS)	2004-2006	6,144,414
Vaccine Introduction Grant (VIG)	2002, 2008, 2012, 2015	8,314,000

Source: http://www.gavi.org/country/all-countries-commitments-and-disbursements, accessed September 11, 2015. Values shown represent Gavi commitments, those which Gavi intends to fund over the lifespan of the program, subject to performance and availability of funds.

Methods overview

Consistent with the prospective nature of the Full Country Evaluations (FCE), the evaluations reflect Gavi-supported activities, assessing implementation and related milestones by support stream. Table 4 provides an overview of the methods used, the sources of data, and the topics assessed by these methods.

Table 4: Evaluation methods

Method	Source consulted/study area	Topics investigated
Process tracking	- Collected and reviewed documents from various levels of the health system, including Gavi applications and decision letters; Expression of Interest (EOI); various GoB letters; meeting minutes of interagency coordination committee (ICC), local consultative group (LCG), program implementation committee (PIC), technical subcommittee (TSC) and technical advisory group (TAG) ; other GoB documents, such as operational plans (OP), revised operational plans, program implementation plan of health, population, nutrition and sector development program (HPNSDP), health bulletins, and Comprehensive Multi-Year Plan (cMYP). - Conducted brief interviews, which have been denoted as fact-checking interviews (FCIs) at the national and subnational levels to confirm factual information. - Observed meetings, workshops and trainings, including ICC meeting, six divisional workshops with multisectoral partners, trainings for district maternal, child health and immunization officer (DMCH&IO), and first line supervisors. Advocacy meetings for introducing PCV & IPV at all administrative level (7), launching ceremony for introducing PCV and	- Information was collected based on relevant theory of change (TOC) milestones for HSS, PCV, IPV, and HPV.

	IPV at national, divisional, district and subdistrict (upazila) level trainings for PCV (16) and orientations on IPV (20).	
Key informant interviews (KIIs)	- Conducted 28 country-level KIIs with GoB personnel from national to subdistrict level - Conducted three KIIs with development partners from national to subdistrict level - Global-level KIIs: Total = 23; Gavi Secretariat = 16; Alliance partners = 5; Other = 2	- Collected information based on the relevant TOC milestones for HSS, PCV, and IPV.
Focus Group Discussions (FGDs)	- Conducted one FGD with DMCH&IOs - Conducted two FGDs at subdistrict/upazila level with the community-level Health Assistants, who are directly involved with the implementation of new vaccines at the EPI sessions.	- Collected information based on relevant TOC milestones for HSS, PCV, and IPV.
Partnership survey for new HSS application development	- Conducted partnership survey with 9 respondents including GoB stakeholders (5), development partners (3) and Civil Society Organization (CSO) member (1).	- Information was collected on HSS-2 application development process.
Health facility assessment	- Health facility assessment was conducted at facilities located in both rural (Joypurhat and Sylhet) and urban (Rajshahi and Sylhet city corporations) areas - Different levels of facilities included in the survey were tertiary hospitals, medical college hospitals, district hospitals, subdistrict (upazila) health complexes, union subcenters/union health and family welfare centers, community	**Vaccine supply and delivery** - Vaccine-related transportation capacity system - Procurement of vaccination supplies **Staff, review of procedures, and disposal** - Vaccination and adverse event following immunization (AEFI) related meetings - Availability of waste containers **Training and supervision** - Frequency of supervisory visits - Staff trainings by topic

		clinics, NGO clinics, pharmacies and private clinics and hospitals - 123 randomly selected facilities were surveyed, and among them 55 provide vaccination services	**Vaccine availability** - Antigens, diluents, and syringe stocks **Storage of vaccines** - Equipment maintenance and repair - Availability and functional status of cold-chain equipment - Cold-chain equipment guidelines
Health management information system (HMIS) analysis	-	Analyzed HMIS data	
Small area analysis	-	Compiled and analyzed all available household survey and census data sources.	- Estimation of national, divisional, district, and subdistrict (upazila) vaccine coverage and under-5 mortality
Inequality analysis	-	Compiled and analyzed all available survey data sources with information on household wealth and vaccination coverage.	- Estimation of vaccine coverage differences by wealth quintile and sex

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, and Table 7).

Table 5: Country characteristics of Bangladesh

Characteristic	
Demographic and economic indicators	
Total population (2015)	161.0 M
Birth cohort (2015)	3,134,427
Gross domestic product (GDP) per capita (2015)*	US$1,959.50
Health spending and development assistance for health (DAH)**	
Government health expenditure as source (GHE-S)	US$1.18B
DAH, channeled through government (DAH-G)	US$261.4M
DAH, channeled through non-government entities (DAH-NG)	US$165.7M
Total DAH	US$427.1M

*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 2014 USD.

Table 6: Vaccine coverage estimates in Bangladesh

Vaccine coverage	Most recent survey estimate*	WUENIC 2014**	Self-reported coverage to (WHO/UNICEF), 2014***
DPT3/ Penta3 coverage	97.1%	95%	93%
DPT1-DPT3 dropout rate	1.9%	2%	0%
BCG coverage	99.2%	99%	99%
OPV3 coverage	97.1%	95%	93%
Measles coverage	80.5 %	89%	90%
Percent fully vaccinated**	84.7%	N/A	N/A

* Most recent survey coverage estimates from 2014 CES
** WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) 2014[10]

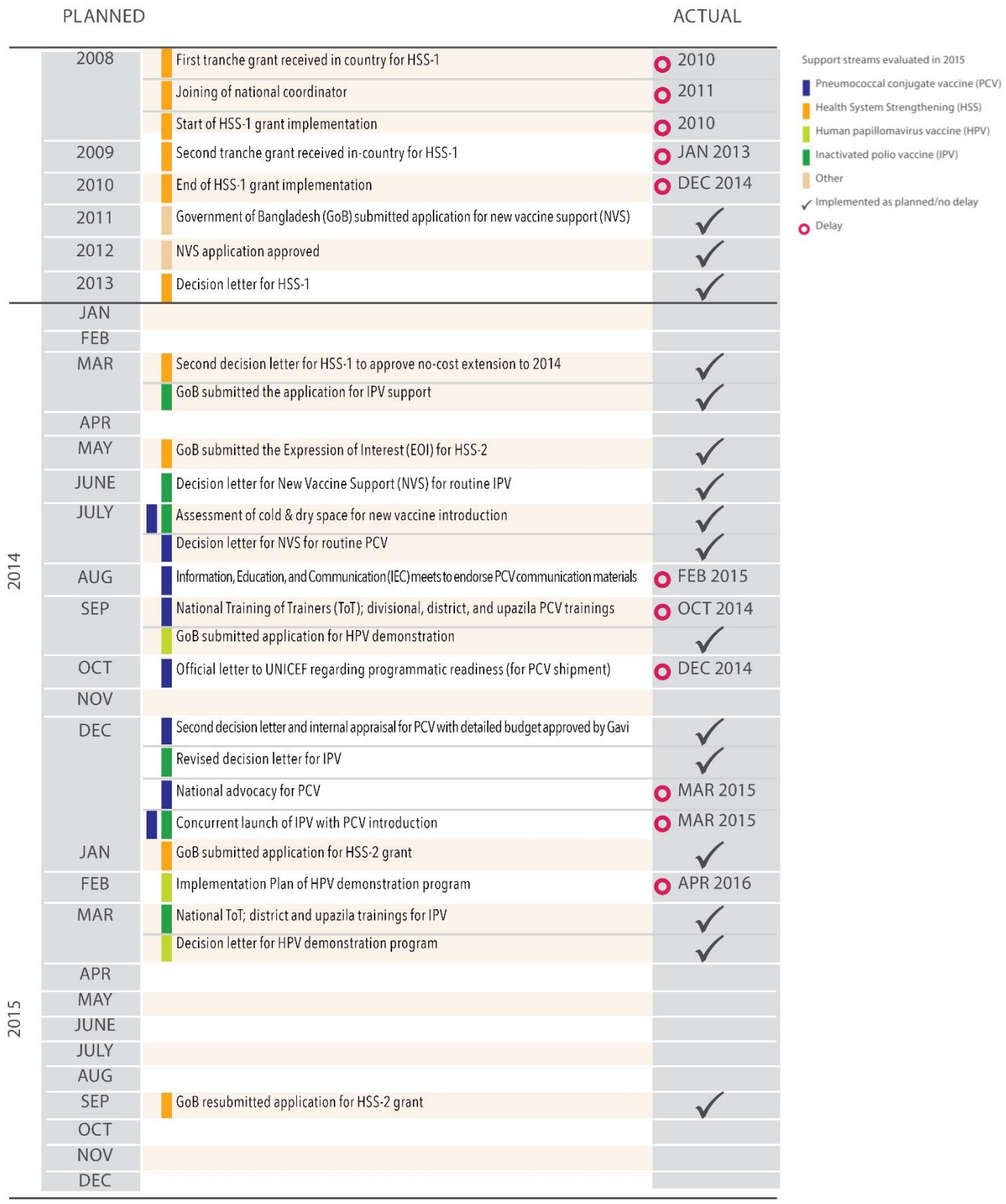
Table 7: Child, adult, and vaccine-preventable disease mortality in Bangladesh

Child, adult, and vaccine-preventable disease mortality	GBD 2013*
All-cause mortality (deaths per 1,000 live births)	Estimate (confidence interval)
Infant mortality (${}_1q_0$)	33.5 (30.1, 37.6)
Under-5 mortality (${}_5q_0$)	40.8 (36.9, 45.4)
Female adult mortality (${}_{45}q_{15}$)	149.5 (114.6, 188.0)
Male adult mortality (${}_{45}q_{15}$)	192.1 (147.5, 237.9)
Cause-specific mortality: children under 5 (deaths per 100,000)	
Measles	4.6 (2.2-8.2)
Diphtheria	0.01 (0.00-0.3)
Tetanus	0.1 (0.0-0.8)
Pertussis	4.9 (0.0-26.2)
Meningococcal infection	0.6 (0.3-1.0)
Diarrheal disease	11.3 (6.3-18.6)
Lower respiratory infections	97.4 (76.1-121.7)
Cause-specific mortality: all ages (rate per 100,000)	
Cervix uteri cancer	2.4 (1.6-3.5)
Acute hepatitis B	2.6 (1.6-3.8)
Cirrhosis of the liver secondary to hepatitis B	4.3 (3.0-6.1)
Liver cancer secondary to hepatitis B	3.8 (1.9-6.1)

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

Timeline of major immunization events

Figure 1: Timeline of major immunization events in Bangladesh



Joint introduction of PCV and IPV

On March 21, 2015, the GoB conducted a joint launch of PCV10 and inactivated polio vaccine (IPV). The joint launch was opportunistic, made possible by the postponed introduction of PCV from 2013 and the priority for IPV introduction by end of 2015, as part of the Global Polio Eradication Initiative (GPEI). The decision to introduce PCV adoption was based on surveillance evidence and public awareness of high burden of pneumococcal pneumonia in country. The GoB submitted an application for new vaccine support (NVS) to Gavi on May 12, 2011, which was approved the following year. For IPV, the GoB submitted the application on March 30, 2014, and it was approved in June 2014.

Finding 1

The joint introduction of PCV and IPV was a function of strong commitment of EPI personnel in completing training and advocacy within a short period and timely support from the partners, despite a number of challenges (delayed training, missed opportunity to integrate preparatory activities). While preliminary findings suggest that first and second PCV has been rapidly scaled up, delivery of third-dose PCV and IPV notably lagged behind.

Figure 5 visualizes the joint introduction of PCV and IPV in Bangladesh, outlining a causal chain of factors and root causes for both PCV (left side of diagram) and IPV (right side of diagram) that ultimately converge on the joint launch. It also highlights mitigating responses by country stakeholders that enabled the new vaccine introductions to proceed.

Initially, PCV was set for introduction in 2013, but on April 29, 2013, Gavi informed the GoB of a global supply shortage of PCV10 and requested postponement until 2014. Upon availability of PCV10, Gavi sent a decision letter on July 8, 2014 to introduce PCV in Bangladesh for December 2014. PCV introduction was again postponed as a result of delayed training, which also delayed the PCV readiness assessment. Inadequate workforce at EPI headquarters (HQ) was identified by respondents at the EPI HQ as a reason for the delay in development of training material. Also, the duration of the planned activities was prolonged, as the same personnel had to manage multiple activities. One respondent mentioned,

> *If the capacity of work force can be increased at EPI HQ, such as number of position of Medical Officers, then we can complete our tasks in a more timely manner. Although WHO and UNICEF personnel helped a lot in the development of training material, all of them including EPI's existing staff were involved in multiple streams. (National KII)*

The protracted process of funds disbursement was another factor that contributed to the postponement of the PCV launch. A key informant mentioned that:

> *The procedure of disbursing VIG from Gavi takes about three months after sending the decision letter. GoB has to send the possible dates of getting the VIG, and then Gavi asked the account numbers for disbursing money. Important thing is, GoB cannot start its trainings or preparatory activities without having the fund, and after receive the fund GoB has to approve the fund from the ICC, which takes additional one month to start trainings for PCV. (National KII)*

Despite initial deferment, efforts from the GoB, WHO, and UNICEF accelerated the process of PCV readiness assessment prior to the vaccine shipment. This is covered in further detail under Finding 2.

In March 2014, the GoB submitted an application to Gavi for IPV support with the aim to introduce it at the same time as PCV in Q4 of 2014. The GoB requested the one-dose vial presentation, but due to a global supply shortage, Gavi Secretariat offered a 10-dose vial presentation instead of the preferred one-dose or five-dose presentation. The GoB did not accept the offer made in the decision letter of June 2014 and raised concern to the Secretariat in a letter about potential high wastage of the 10-dose vial presentation (Figure 1). On December 22, 2014, six months after sending the first decision letter, Gavi sent the revised decision letter offering the five-dose vial presentation, which was accepted by the GoB. PCV and IPV arrived in Bangladesh the first week of February 2015. A contingent ICC convened and approved the joint nationwide launches of PCV and IPV on March 21.

With the protracted communications between Gavi and the GoB on the available dosage presentation of IPV, the country missed the opportunity to combine the PCV and IPV trainings, and thus the opportunity for a more cost-effective integration of pre-launch activities. About two months following the completion of PCV training, the GoB arranged orientation for IPV separately, though joint training materials were previously developed. This doubled the cost of training.

Nevertheless, the commitment and responsiveness of the country partners (EPI stakeholders, WHO, and UNICEF) helped in adapting with the repeated schedule changes. Moreover, after the success of measles-rubella (MR) campaign in 2014, the confidence of the EPI workers at all levels helped to manage challenges effectively in the joint launches of PCV and IPV. One key informant stated,

> *Let any new vaccine arrive, let rotavirus come along with PCV and IPV, we can handle them all and no problems will be faced. This is because we conducted the MR campaign, which is a model for the world. Has anyone else provided as many vaccines anywhere else? It was successful, so what we cannot achieve? (Subnational KII).*

The strong motivation of key government stakeholders and the partner organizations also enabled joint advocacy meetings to be held at all administrative levels within a short period of time.

Findings from the health facility survey and HMIS support a rapid scale-up of PCV. Most facilities began administering PCV within a month of the official launch, although some facilities lagged behind (Figure 2); this is described further in a later finding. Once introduced, coverage of first and second-dose PCV rapidly increased to the same level as pentavalent vaccine (

Figure **3** and 4), however, third-dose PCV remains less than fully routinized when compared to third-dose pentavalent vaccine (

Figure *4*). One possible root cause is the introduction of a separate visit for third-dose PCV (at 18 weeks) rather than delivery of third-dose PCV at the same visit as third-dose pentavalent (at 14 weeks). The separate visit was based on evidence suggesting that mothers preferred a separate visit for third-dose PCV, however, the need for caregivers and children to return on a separate occasion for third-dose PCV may be contributing to higher dropout for PCV compared to pentavalent vaccine.

Figure 2: Initiation of PCV vaccination at 63 facilities of four different districts and city corporations

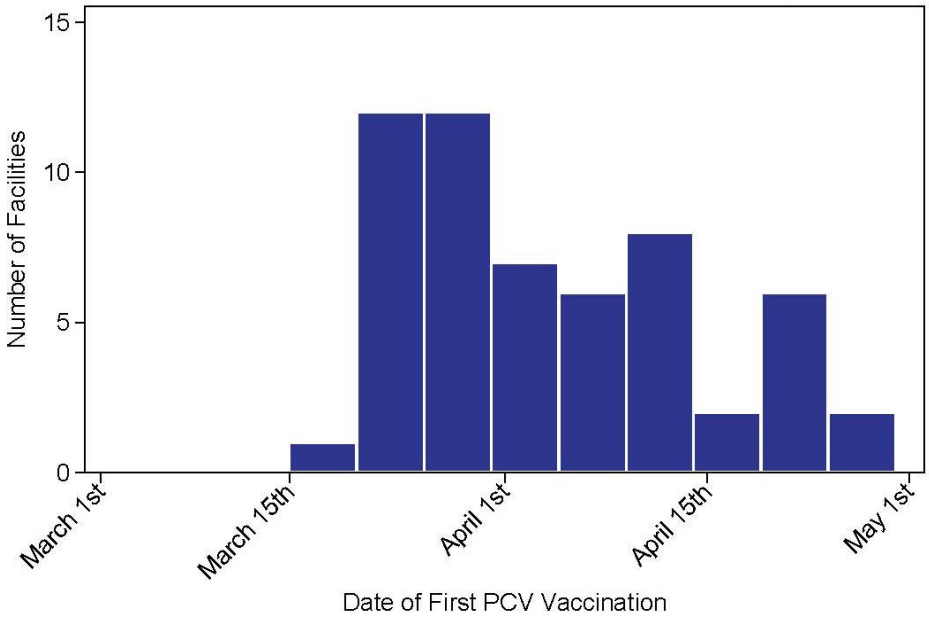


Figure 3: PCV: Pentavalent ratio in 2015, by district

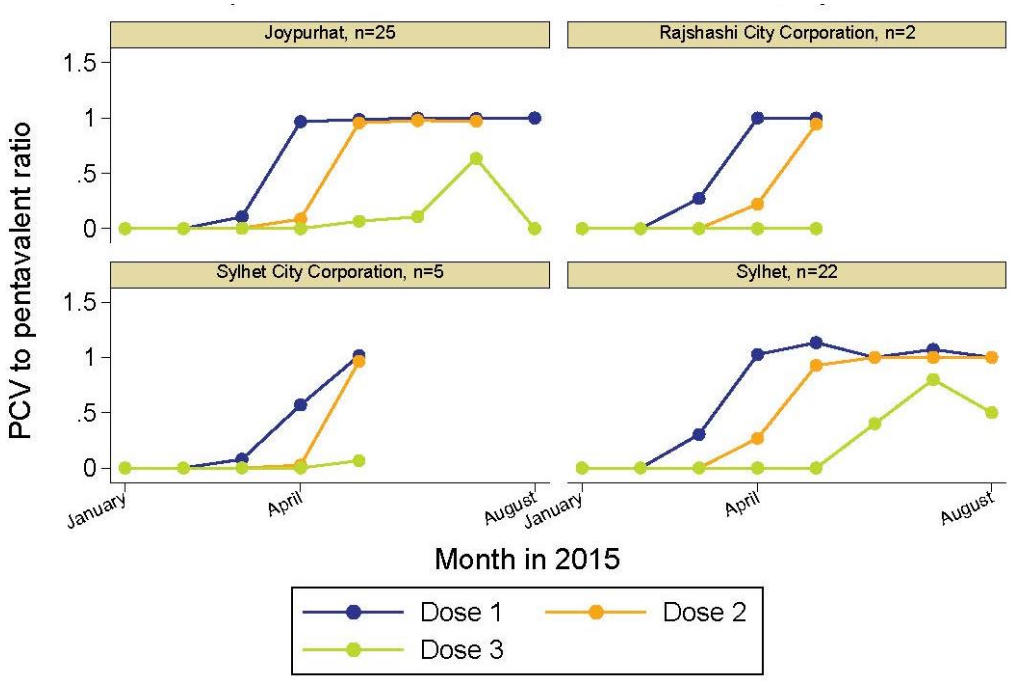
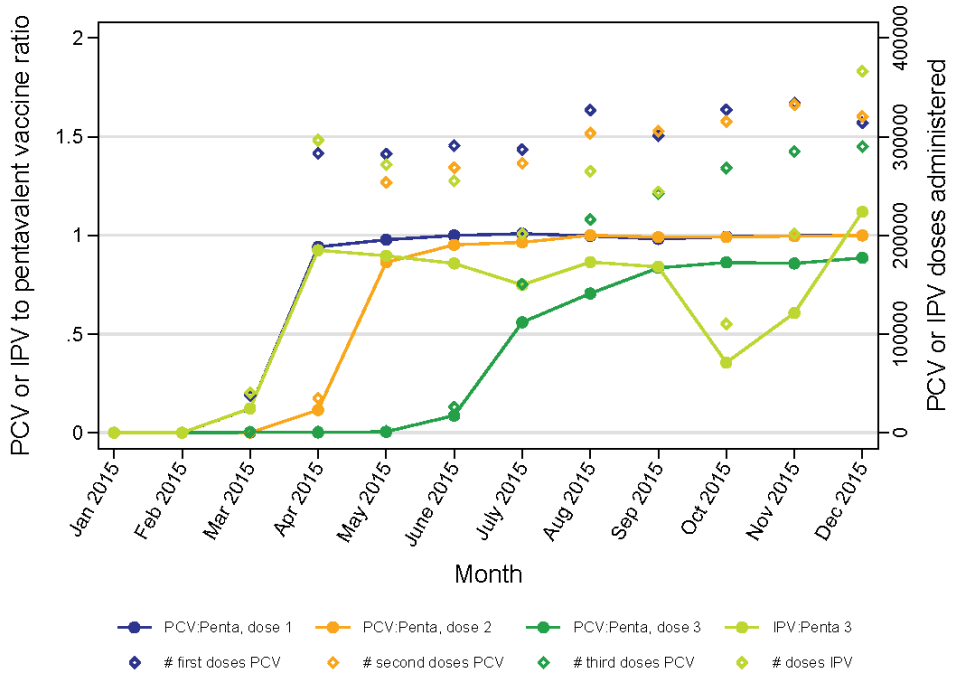
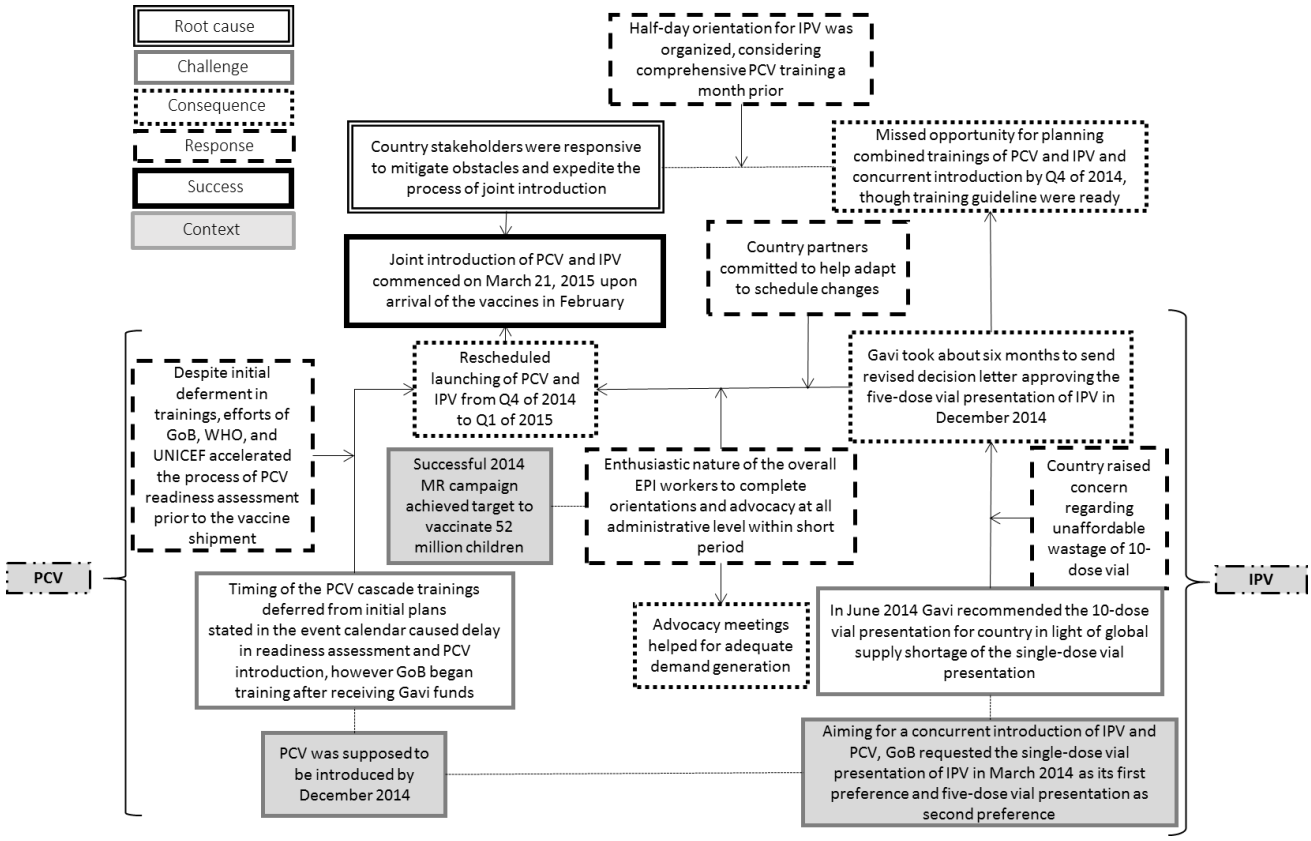


Figure 4: PCV/IPV: Pentavalent ratio in 2015 from HMIS data



In addition to challenges routinizing third-dose PCV, IPV suffered from successful integration into routine EPI in the first six to eight months following introduction (Figure 3 and Figure 4) although recent data suggest that delivery of IPV has improved. We elaborate on this finding later in this section.

Figure 5: Root cause analysis of joint introduction of PCV and IPV happened due to strong and timely commitment of the EPI personnel and support of the partners



Recommendations

1. Gavi should maintain periodic meetings or monthly conversation with the country stakeholders, including the Government of Bangladesh (GoB) and EPI traditional partners, regarding the country's vaccine needs and its availability in the global market, through the period of application development to the introduction phase.
2. The country should maintain closer communication with Gavi to remain informed of details about availability of vaccines and decision letters so that they can better plan to avail mixed opportunity for integration of introduction multiple vaccines.

3. Based on the less-than-full routinization of third-dose PCV, a review should be conducted of the appropriateness of the additional visit of third-dose PCV at 18 weeks, taking into account demand side considerations, e.g. caregiver preferences, and vaccine coverage.

Robustness of finding

Finding 1	Ranking	Robustness criteria
The joint introduction of PCV and IPV was a function of strong commitment of EPI personnel in completing training and advocacy within a short period and timely support from the	A	This finding is supported by multiple data sources, such as process tracking activities-document review, event (PCV trainings at different

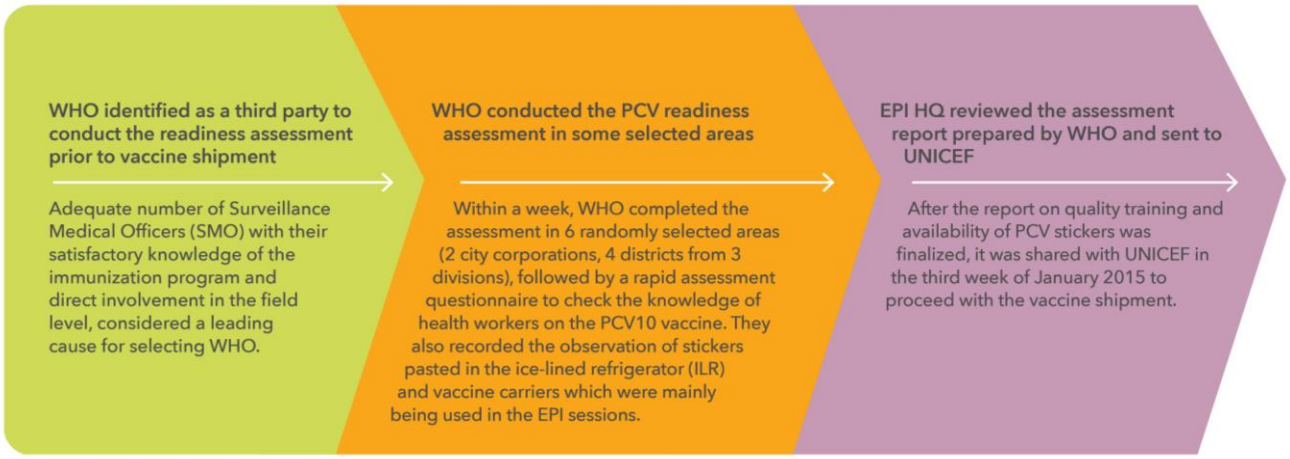
partners, despite a number of challenges (delayed training, missed opportunity to integrate preparatory activities). While preliminary findings suggest that first and second PCV has been rapidly scaled up, delivery of third-dose PCV and IPV notably lagged behind.	administrative level, IPV orientation at different administrative level, ICC meeting) observation, FCIs, and KIIs.

Finding 2

The PCV readiness assessment was completed successfully and largely as planned in spite of delayed training activities and political unrest that restricted access by WHO to upazila-level facilities for the assessment. This was facilitated by reminders and guidance from the Gavi Secretariat and UNICEF to the EPI.

The objective of the PCV readiness assessment is to ensure sufficient health worker knowledge about the handling requirements for PCV 10 and to verify availability of PCV fridge stickers outlining the handling requirements on all cold chain equipment. In spite of delayed training activities and political unrest that restricted access by WHO to upazila-level facilities for the assessment (Figure 5), the readiness assessment was better communicated and executed in Bangladesh than in the other three FCE countries. Various challenges experienced in other countries as noted in the FCE 2013 report encouraged the Gavi Secretariat to send reminders to Bangladesh and other countries slated to launch PCV 10. Bangladesh received a reminder six months prior to the scheduled launch in Q4 2014, and the UNICEF country office also reminded the GoB about the completion of the readiness assessment as a precondition to vaccine shipment. To meet the assessment, training at all administrative levels was completed by January 2015, and stickers were distributed to all the EPI vaccine stores for pasting on cold-chain storage equipment.

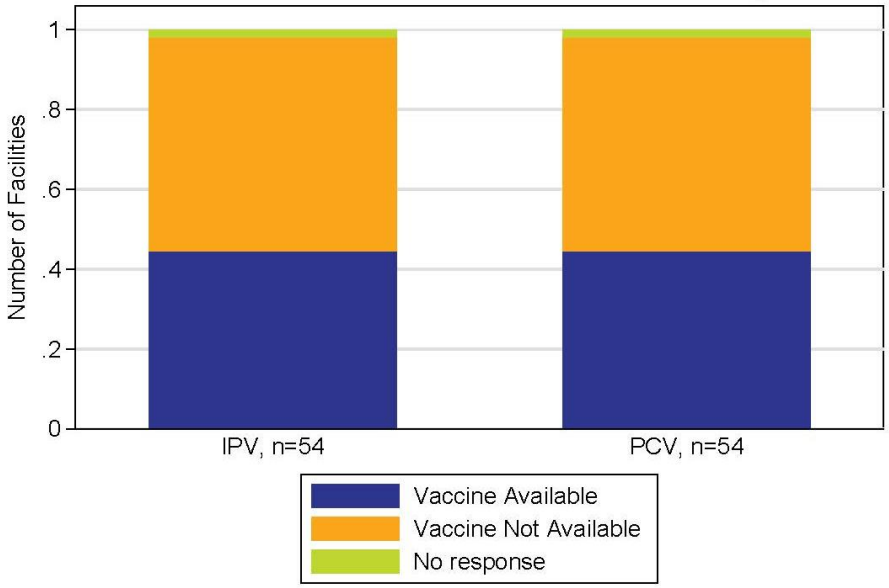
Figure 6: Readiness assessment process



Subnational KIIs and FGDs revealed that due to political unrest, assigned WHO staff conducted the assessment at the Upazila Health Complex of two districts by inviting the randomly selected Health

Assistants of the respective areas, rather than conducting the assessment by visiting EPI sessions. We have not identified negative effects of this approach. Our Health Facility Survey findings also confirm that facilities had trained staff for PCV and that PCV stickers were present on all cold-chain equipment. It should be noted however, that the HFS indicated that funding was not always sufficient for training and that the vaccine was not always available at the time of training (Figure 7). This was confirmed by observation from process tracking that found that PCV vaccine vials were not available during the training at selected subnational levels.

Figure 7: Availability of PCV and IPV for demonstration during training sessions



Recommendation

1. Gavi and partners should continue to ensure robust communication, as was the case in Bangladesh, about the rationale and procedure for the PCV readiness assessment.

Robustness of finding

Finding 2	Ranking	Robustness criteria
The PCV readiness assessment was completed successfully and largely as planned in spite of delayed training activities and political unrest that restricted access by WHO to upazila-level facilities for the assessment. This was facilitated by reminders and guidance from the Gavi Secretariat and UNICEF to the EPI.	A	This finding is supported by multiple data sources such as process tracking activities (document review and FCI) and in-depth investigations (KII and FGD).

Finding 3

Timely responses from midlevel managers helped to overcome challenges related to delayed fund disbursement from the central level to the subnational level for IPV orientation training.

As noted in the summary, IPV was not originally included in the cMYP or in the operational plan (OP) of Maternal, Neonatal, Child, and Adolescent Health (MNC&AH). Gavi approved the application for IPV support, following IRC recommendation, and requested a future rather than immediate revision of the cMYP. However, the GoB was unable to deploy the Vaccine Introduction Grant (VIG) funds because the budget for the program implementation plan (PIP) of the OP had not been approved. As a result, GoB decided to use a portion of the advocacy fund from the PCV VIG for completion of IPV orientation and joint advocacy meetings. In addition, WHO and UNICEF provided financial support for preparing training materials.

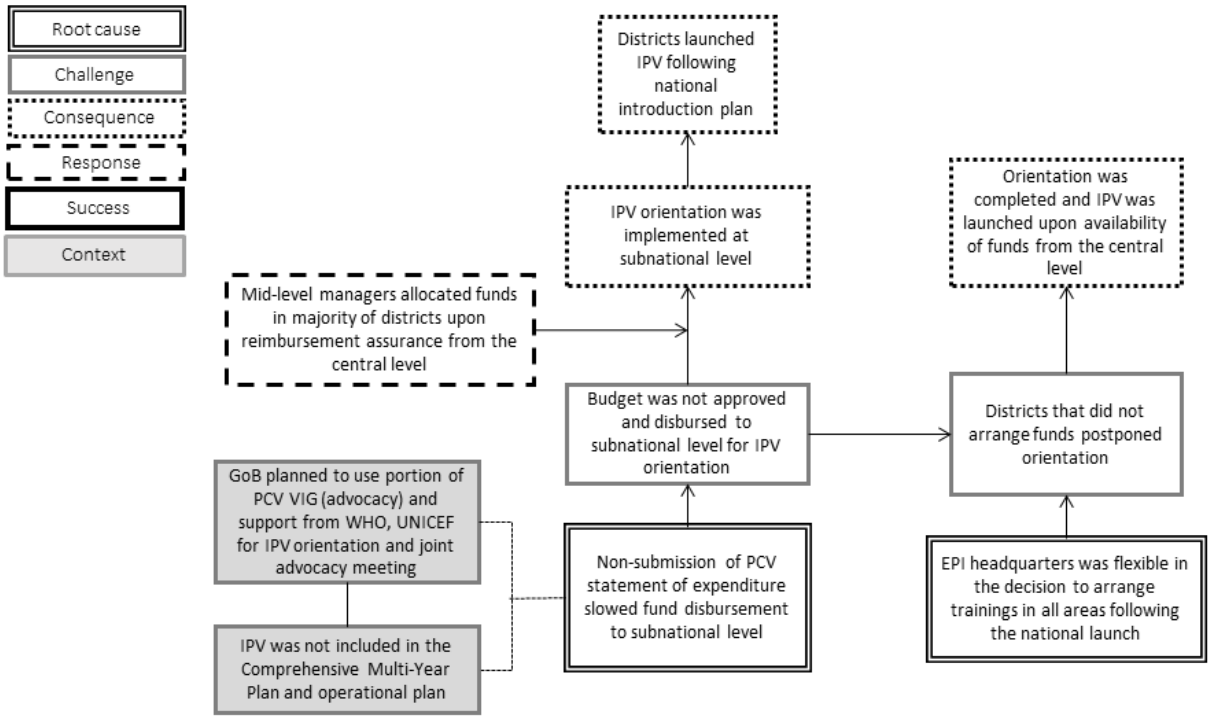
Although the GoB identified a solution for funding the preparatory activities, the disbursement of funds to subnational levels was delayed due to the failure to submit the statement of expenditure (SoE). Subdistrict-level managers such as Upazila Health & Family Planning Officer (UH&FPO) allocated their own funds in the majority of the upazilas in order for preparatory activities for IPV to proceed. This was done with assurance of reimbursement from the central level. In one district, the district manager reported that they used their personal money (which was later reimbursed) to ensure the event was held on time. In contrast, city corporation officials faced no difficulties in funding IPV training activities due to having their own funds. In some districts, contingency funds were not available, and as a result IPV training was only conducted at a later date, which led to a delayed launch in some areas. Transition of the district manager from one district was one of the reasons observed by the process evaluation team for postponement of orientation, in addition to the inability to source contingency funds.

Data gathered by the FCE suggests that the training was largely completed as planned. The FCE Health Facility Assessment (HFA) data showed that 98% of field staff received training on PCV and IPV before introduction. The team's own observation of training also suggested that targeted health workers were trained in each of the visited areas. However, national-level KIIs indicated that countrywide political unrest and involvement of key people including the GoB and development partners in application development for the new HSS grant had an impact in this decision about training. Considering the comprehensive PCV training, EPI HQ relied on its staff's skills and planned for a short orientation for IPV. Although they considered the schedule given by the minister for the launching ceremony, they did not restrict the timing of the orientations at all administrative levels. Some informants also agreed that the time given for IPV orientation was appropriate, compared to the comprehensive PCV trainings, as both vaccines are administered in the same way. One informant stated that:

> *We have to complete the IPV training within a short period as EPI headquarters sent the letter mentioning the launching date. In some areas two batches orientation conducted in same day, because we got only a week to complete orientations at all subdistrict (upazila) level prior launching. As there was time constraints and countrywide political unrest, so everybody was in hurry to complete this. It was conducted for 4-5 hours following instruction of half day orientation. However, it would be better if we were able to do more comprehensively (Subnational KII).*

At this early stage, we have not identified negative impacts of the restricted orientation of IPV. For example, no AEFI were reported within six months of launching vaccines in routine EPI. We will continue to monitor this as part of FCE activities.

Figure 8: Root cause analysis of timely responses from the midlevel managers helped to overcome the challenges related to delayed fund disbursement for IPV orientation



Recommendation

1. During the planning phase, the GoB should give more consideration to the time needed to ensure that the budgetary provision aligns with the national health plan (e.g., cMYP). These issues should be resolved prior to the process of submitting an EOI to Gavi.

Robustness of finding

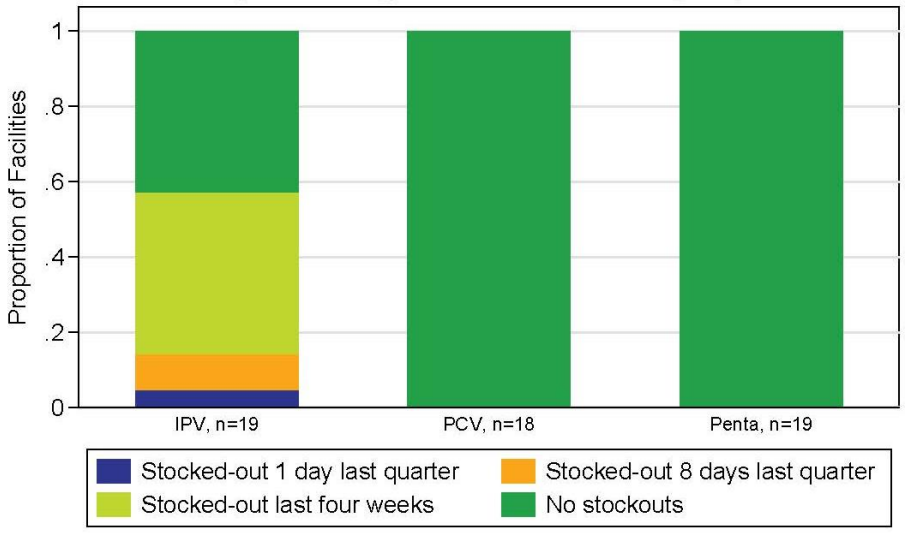
Finding 3	Ranking	Robustness criteria
Timely responses from midlevel managers helped to overcome challenges related to delayed fund disbursement from the central level to the subnational level for IPV orientation training.	A	This finding is supported by multiple data sources such as process tracking activities-document review, event (IPV orientations at different administrative level) observation, and KII along with the quantitative data sources from the HFA.

Finding 4

The country experienced challenges in successfully integrating IPV vaccine into routine EPI due to a shortage of IPV vaccines at all levels about six months after introduction. This was the result of higher than estimated wastage of the five-dose presentation of IPV and inaccurate subnational target population data when determining supply needs, later mitigated this by implementing a multi-dose vial policy.

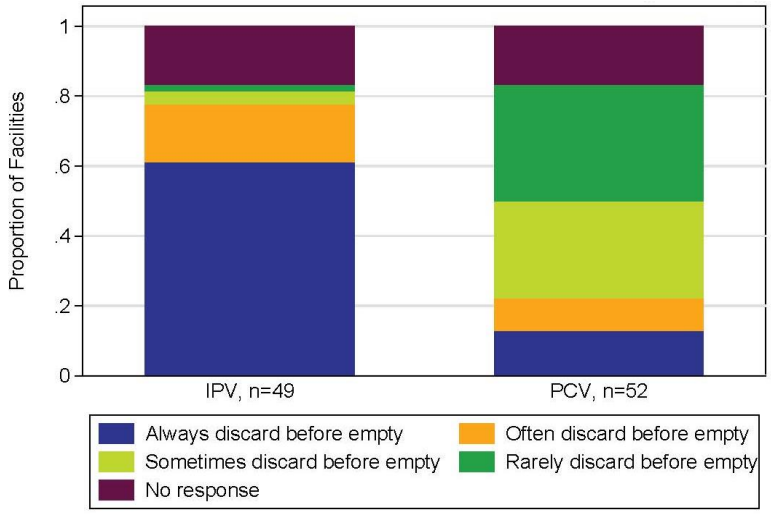
As noted in Finding 1, Bangladesh has experienced challenges in the delivery of IPV since the joint launch in March 2015. This is driven by widespread IPV stock-outs, which were noted in the Gavi FCE health facility survey (*Figure 9*), with 57% of facilities reporting stock-outs in the last quarter (duration varied from March to August 2015, based on time of data collection).

Figure 9: Proportion of facilities experiencing different types of PCV and IPV stock-outs (duration varied from March to August 2015, based on time of data collection)



These findings are supported by a visit from the FCE team to one district where IPV vaccination had been postponed due to vaccine stock-outs. Stock-outs were driven by high wastage of the five-dose IPV presentation drove stock-outs, as supported by the health facility survey (Figure 10).

Figure 10: Discarded vaccine vial after at least one dose used, but before empty



Administrative data (HMIS)indicated that the wastage rate was 41% (up to end of October 2015) in comparison to the projected wastage rate of 30% that was used to determine vaccine supply, which is a root cause (Figure 11) of the stock-outs in addition to the unavailability of the one-dose presentation as earlier described:

> *Bangladesh has 120,000 outreach centers, so at least one vial needs to be distributed for each center, regardless of the targeted number. However, the country applied for IPV based on population estimation instead of number of outreach center. Additionally, Gavi estimated the wastage rate based on the total population and vaccine doses, not on vaccine vials, which resulted in high shortage of IPV. (National KII)*

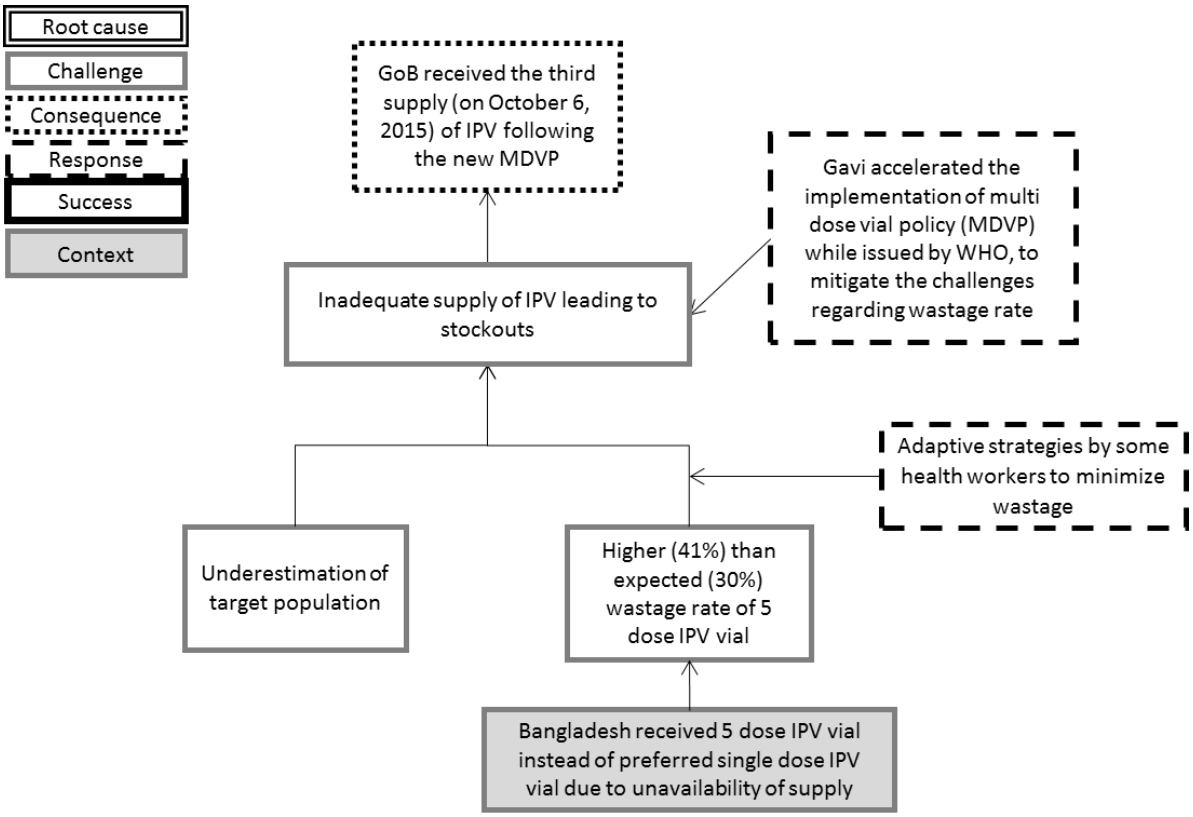
Stock-outs of IPV were also the result of underestimated target population. In some areas, adaptive strategies have been used. For example, some upazila-level supervisors directed health workers to use different strategies such as merging the targeted children of two or more nearby EPI sessions and vaccinating accordingly. A KI mentioned that health workers took an alternative vaccination strategy to reduce the wastage rate of IPV in some other areas.

> *The health workers of the* [X] *district did not open the vial before confirming three or more targeted children at the EPI session and they did not face any shortage by following this strategy (Sub national KII).*

The GoB addressed these challenges. On October 6, 2015, the GoB received its third supply of IPV that allows use up to 28 days after opening the vial cap (with accompanying guidelines on storage procedure).

In addition, from the second year of IPV introduction, supply will be estimated based on coverage for previous year.

Figure 11: Root cause analysis of high wastage rates resulted in IPV shortages in many areas, which created challenges in successful integration of the vaccine into routine EPI and was mitigated by adapting multi-dose vial policy



Recommendations

1. Investments in data and methods are required to improve forecasting of vaccine wastage and accompanying supply to avoid stock-outs as experienced in the introduction of IPV in Bangladesh.

Robustness of finding

Finding 4	Ranking	Robustness criteria
The country experienced challenges in successfully integrating IPV vaccine into routine EPI due to a shortage of IPV vaccines at all levels about six months after introduction. This was the result of higher than estimated wastage of the five-dose presentation of IPV and inaccurate subnational target population data when determining supply needs, later mitigated this by implementing a multi-dose vial policy.	B	This finding is supported by multiple data sources such as KIIs from the national and subnational levels and document review.

Human Papillomavirus Vaccine

Bangladesh submitted a proposal to Gavi in September 2013 for an HPV vaccine demonstration project. This initial application was not accepted as the proposal did not mention the preferred type of vaccine (quadrivalent or bivalent), which is a mandatory requirement. Moreover, an HPV vaccination program

was not included in the original Operational Plan (OP) of Maternal, Neonatal, Child, and Adolescent Health (MNC&AH) for the period of 2011-2016. After revision of the OP of MNC&AH, Bangladesh submitted a revised application on September 15, 2014. The chosen vaccine type for the demonstration project was the bivalent formulation, with the target age group being girls aged 10. Gazipur District was selected as the demonstration site, with a school-based delivery model chosen to be tested. The proposal was signed off by the Ministry of Education (MoE) and Ministry of Health (MoH).

Finding 1

The first rescheduled date for the HPV vaccine demonstration project was chosen with limited coordination with the Ministry of Education, leading to a date that was incompatible with the school year. The proposed date of February 2016 was chosen accounting for the school calendar and the workload associated with the PCV and IPV introductions. However, considering the availability of HPV vaccine with appropriate expiry, the EPI HQ deferred the HPV vaccine demonstration program for two months to April 2016.

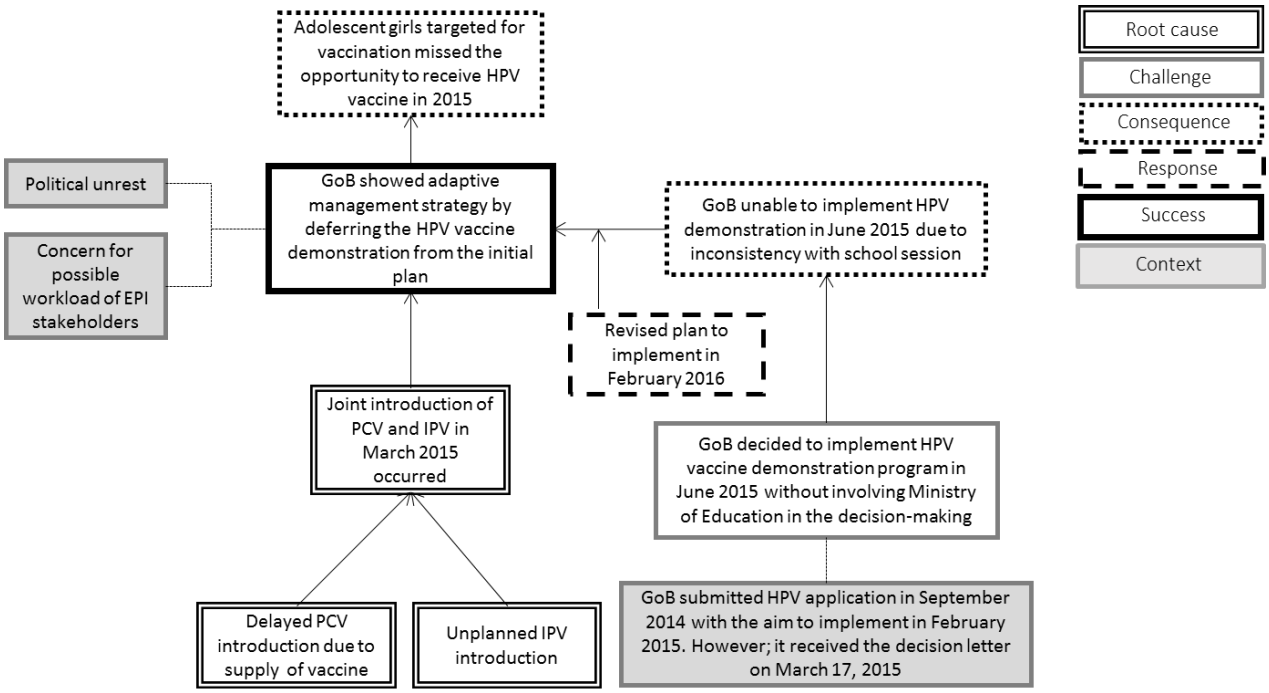
In the submitted application, an initial launch of February 2015 was proposed; however, the decision letter from the Independent Review Committee (IRC) was sent on March 17, 2015. Following the decision letter, an internal discussion was held with EPI personnel and partners, such as WHO and UNICEF; however, it did not include partners from the MoE. As a result, the initial date chosen of June 2015 was not compatible with the required six-month intervals between HPV vaccine doses and the school calendar. In addition, FCE needs to investigate whether there are any coordination gaps between Gavi and country stakeholders and other partners in country (Figure 12).

The later and current date of February 2016 was determined by considering the school calendar and also took into account the heavy workload of the EPI and partners due to the introduction of PCV and IPV, as well as political unrest.

> *We introduced two vaccines, PCV and IPV, in the first quarter of 2015, and our main focus was there, though political unrest situation was prevail then, so we decided to shift the date of introduction to 2016. (National KII)*

This evidence of adaptive management should allow sufficient time for preparatory activities, although the consequence of this is a missed opportunity for vaccinating girls from the target age group in the demonstration site district during 2015. Figure 12 shows the context, challenges, and causal relation of this finding. Additionally, at the very end of current reporting period, EPI HQ deferred the HPV vaccine demonstration program and rescheduled in April 2016, considering the availability of close expiry dated HPV vaccine (supposed to be expired in June 2016). The FCE team will continue to monitor progress.

Figure 12: Root cause analysis of the GoB's adaptive management strategy by deferring the HPV vaccine demonstration program from the initial plan



Robustness of finding

Finding 1	Ranking	Robustness criteria
The first rescheduled date for the HPV vaccine demonstration project was chosen with limited coordination with the Ministry of Education, leading to a date that was incompatible with the school year. The proposed date of February 2016 was chosen accounting for the school calendar and the workload associated with the PCV and IPV introductions. However, considering the availability of HPV vaccine with appropriate expiry, the EPI HQ deferred the HPV vaccine demonstration program for two months to April 2016.	B	Findings were supported by multiple data sources (KII, FCI, and document review)

Finding 2

The selection of the district for the HPV vaccine demonstration project was based largely on characteristics that would facilitate learning for national introduction. Our emerging findings suggest that the selection of the school-based delivery model was not based on a complete understanding of the

importance of financial sustainability or a comprehensive understanding of the experience of HPV vaccine delivery in other countries.

The 2014 report highlighted district selection as an area of focus for the 2015 FCE. In selecting Gazipur district for the demonstration site, a range of factors, including geography, enrollment in school, and vaccination coverage rates were considered. Although Gazipur district has high vaccine coverage and school enrolment, most districts in Bangladesh have similarly high levels. The district also has both urban and rural areas. The existence of floating population due to large number of garment factories will provide lessons for hard-to-reach populations.

> *There is not much variation in our country. However, as the country decided on one district, so there are some geographical and cultural differences. In this case, Gazipur district may not reflect the entire country but overall it could give a flavor. (National KII)*

Based on KIIs, we did note, however, some tension between the ability to implement the demonstration project successfully and the opportunities for learning for national introduction, as indicated by the following quote:

> *Selection of Gazipur district has so many rationales. One, it is near to capital as well as very close to EPI HQ, better supervision of our activities are therefore possible, coverage of the Gazipur district is very high, and infrastructure is good for delivery of vaccine. The cold-chain capacity have already been assessed, and found as adequate. Even there are no vacant posts of health staff. (National KII)*

Overall, however, our assessment is that there is a strong rationale for the choice of Gazipur district as the demonstration site to maximize learning for national introduction.

The HPV vaccine demonstration project has chosen to test a delivery model that is mainly school-based with supplemental activities from EPI outreach centers for out-of-school girls. School-based delivery models have been tested in a number of countries, both FCE and non-FCE. As indicated in other sections of this year's FCE report, a common conclusion after the demonstration project is that a school-based delivery model is not financially sustainable. This has led to countries moving toward alternative delivery models that are, for example, primarily facility-based, which typically have more limited coverage. These findings from other countries highlight the importance of early assessment of financial sustainability and the importance of testing multiple delivery models. Our emerging findings suggest that country stakeholders did not consider financial sustainability and were not fully aware of the experiences from other countries when choosing the delivery model to be tested. As per FCI, GoB personnel believed that they had no option to change the implementation plan that was chosen in the submitted application. This area will be a continued focus for the FCE in 2016.

Recommendations

1. As the demonstration project proceeds, the government and partners should ensure an early assessment of financial sustainability of the chosen delivery model, and consider testing other delivery models (exclusively through routine EPI sites; and exclusively through school/educational institutions) over the course of the two-year demonstration project.
2. Gavi and partners should provide earlier and more comprehensive technical assistance in the design phase of HPV vaccine demonstration projects, including sharing other country experiences, to guide delivery model choices.

Robustness of finding

Finding 2	Ranking	Robustness criteria
The selection of the district for the HPV vaccine demonstration project was based largely on characteristics that would facilitate learning for national introduction. Our emerging findings suggest that the selection of the school-based delivery model was not based on a complete understanding of the importance of financial sustainability or a comprehensive understanding of the experience of HPV vaccine delivery in other countries.	B	The finding is supported by fewer data sources (limited triangulation) of good quality but perhaps more perception-based than factual.

Health System Strengthening (HSS-1)

Bangladesh was approved for support through Gavi's Health System Strengthening (HSS) window in 2008. The Gavi HSS grant aimed to address critical gaps that constrained the ability of the GoB to achieve targets of the Health, Population, Nutrition, and Sector Development Programme (HPNSDP 2011-2016) and implement annual work plans based upon these targets. The overarching HSS operational aim is to ensure Community Clinics (CCs), which are the backbone of the new operational strategy for delivering primary health care, have the minimum functional capacities and infrastructure to deliver safe and effective services for maternal-child health and immunization. The FCE undertook a retrospective evaluation of Bangladesh's first HSS grant and details a number of success and challenges below.

Finding 1

Comprehensive and prompt reprogramming accelerated the implementation of HSS-1 activities.

A major cause of delayed implementation of Bangladesh's HSS-1 grant was that funds were not available to begin implementation. Gavi sent the decision letter in late 2008 indicating approval of the grant. However, the first tranche of funds was only disbursed to the country in 2010. The root cause of this was the protracted time required to complete the financial management assessment (FMA). The FMA was part of the Transparency and Accountability Policy (TAP), which was introduced in its first iteration in 2009 and was a requirement before disbursement of funds to country. The implementation of FMA from the global level caused delays in all HSS-eligible countries.

> *Gavi had to conduct it in phases in 70 countries. This involved internal consultations within Gavi, along with legal issues, which takes time. The programs stopped until all countries could be signed. The process took until 2010-2011 to complete all FMAs. (Global KII)*

The objective of FMA was to allow Gavi, in collaboration with the GoB and its development partners, to better understand Bangladesh's public financial management (PFM) systems in the health sector, the relative strengths and weaknesses of these systems, and the different financing mechanisms available to manage Gavi cash-based support. It was supposed to guide both the country and Gavi in identifying and agreeing on the best financing mechanism for Gavi support as well as additional fiduciary assurance.

While this rationale is consistent with the spirit of the Paris Declaration on Aid Effectiveness, the sudden introduction of FMA was not reflected on the principles of donor alignment with national strategies of partner countries.

The protracted period for completing the FMA also had a number of other root causes, including political change and staff turnover (in particular, turnover from staff who were involved in the original application and at WHO and UNICEF).

The second tranche of funds was also delayed for different but related reasons. The root cause in this case was the government's delayed completion and submission of the external audit report to allow disbursement of the second tranche funds for HSS-1. Government stakeholders were initially unaware of the external audit reporting requirements, despite the IRC decision letter calling attention to potential delays in funds disbursement if the external audit report was not received in a timely manner.

> *GoB did not understand many external audit-related requirements by Gavi, even did not know they had to submit one. When the issue was raised, country seemed a bit surprised. They had to submit that in 2013 and it cleared in 2014. There are also capacity issues with limited bodies, not having financial management capacity and, let's say, issues with attention span of government regarding various programs.* (Global KII)

During a Gavi mission to country in 2013, government stakeholders were reminded about the reporting requirement. The delay in availability of funds had obvious downstream consequences on the disbursement of funds to the designated OPs, which is discussed in the following finding (Figure 13).

Recommendation

1. Early communication and corresponding support between Gavi, partners, and countries should accompany the recent 2016 guideline revision to more clearly outline the time required for HSS processes such as the FMA.

Robustness of finding

Finding 1	Ranking	Robustness criteria
Comprehensive and prompt reprogramming accelerated the implementation of HSS-1 activities	A	The finding is supported by multiple qualitative data sources such as KII and document review, which were well triangulated.

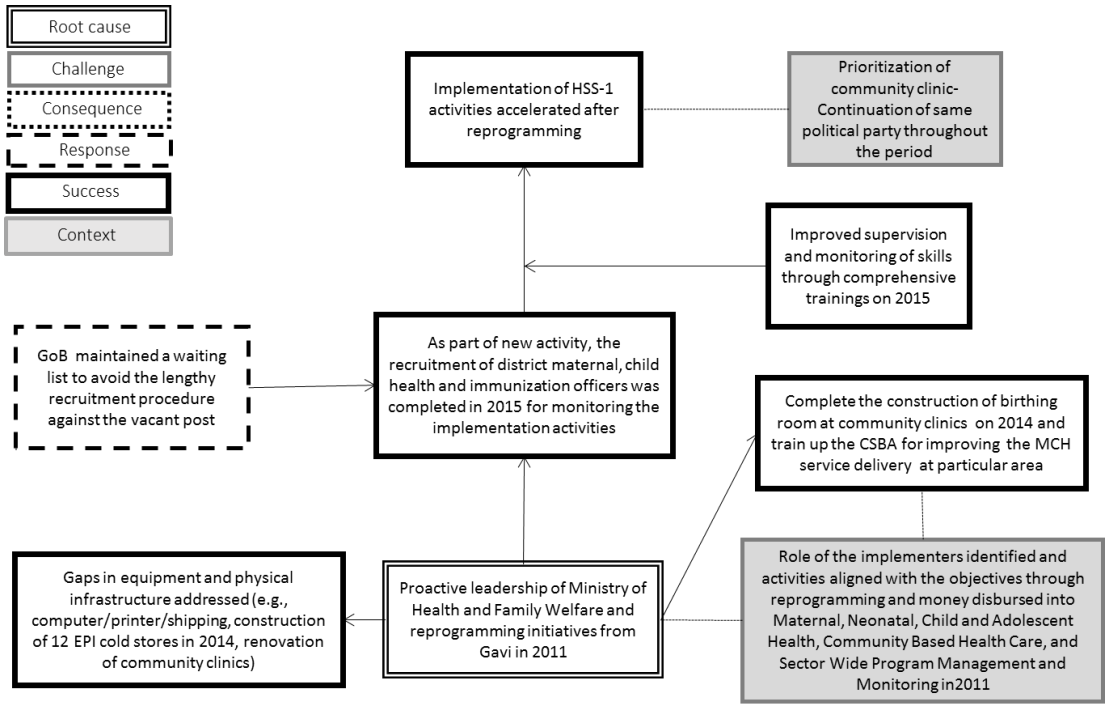
Finding 2

Delays in fund disbursement from Gavi to the country were experienced over the course of the HSS-1 grant. There was a two-year delay in disbursing the first tranche of funds for HSS implementation due to the protracted period required to complete the newly introduced Financial Management Assessment. The second tranche of HSS funds was also delayed due to delayed completion of external audit report requirements.

By 2009, the priorities in delivering primary health care services had been changed by the newly elected government. One of the priorities of the government was to establish community clinics by a new project called Revitalization of Community Health Care Initiative in Bangladesh (RCHCIB). As a

government requirement, the Gavi HSS grant, which was initially designed in 2008 prior to the change in national priorities, needed to be realigned with the SWAps of the MOHFW. In this regard, updating the implementation plan through reprogramming was essential to commence HSS grant activities. As per the suggestion of Gavi Alliance, the GoB formed a technical subcommittee in June 2011 that prepared the reprogramming schedule for Gavi-HSS activities. Disbursed money was utilized through three different OPs: MNC&AH; Community Based Health Care (CBHC) and Sector Wide Programme Management and Monitoring (SWPMM). The stakeholders of implementation sites were also aware of the reprogramming of the HSS grant. Several meetings were also conducted and received various outputs from the concerned personnel for updating the plan, even though there was no specific guideline from Gavi for the purposes of reprogramming. During reprogramming, in addition to the original 13 districts, it was proposed that 19 other districts be covered (Figure 13). After the reprogramming of the HSS grant, the specific role of the implementers was identified and implementation activity was accelerated as money was disbursed into the above-mentioned OPs.

Figure 13: Root cause analysis of accelerated implementation of HSS-1 activities after reprogramming



Robustness of finding

Finding 2	Ranking	Robustness criteria
Delays in fund disbursement from Gavi to the country were experienced over the course of the HSS-1 grant. There was a two-year delay in disbursing the first	A	The finding is supported by multiple qualitative data sources such as KII and document review, which were well triangulated.

tranche of funds for HSS implementation due to the protracted period required to complete the newly introduced Financial Management Assessment. The second tranche of HSS funds was also delayed due to delayed completion of external audit report requirements.

Finding 3

Funds were not disbursed to the implementers of HSS-1 grant activities due to the transition between the second Sector Wide Approach (SWAp) to the third SWAp, which led to a restructuring of HSS grant activities from one Operational Plan to three Operational Plans.

During the time of the HSS proposal development in 2008, Bangladesh followed the second SWAp of the Health Nutrition and Population Sector Program (HNPSP). Under the second SWAp, 38 OPs were included under the MOHFW. The proposed activities of the HSS proposal were slated for implementation under the OP of Essential Service Delivery (ESD) of the Directorate General of Health Services (DGHS). As noted earlier, fund disbursement to Bangladesh was delayed until 2010; at that time of disbursement it was not possible for funds to be utilized because the GoB had started following the third SWAp of the HPNSDP in July 2011. Under the third SWAp, most of the activities of ESD where the HSS grant was located were transferred to two new OPs: MNC&AH and CBHC (Figure 14). Therefore, under the third SWAp, HSS grant activities were now split between three OPs rather than a single OP under the second SWAp.

Relocation of HSS grant activities from the single OP under the second SWAp to the three OPs under the third SWAp was time-consuming and further delayed disbursement of funds to the OPs for implementation of HSS activities. Part of the delay was due to the need to understand and harmonize the HSS grant utilization process by the different OPs.

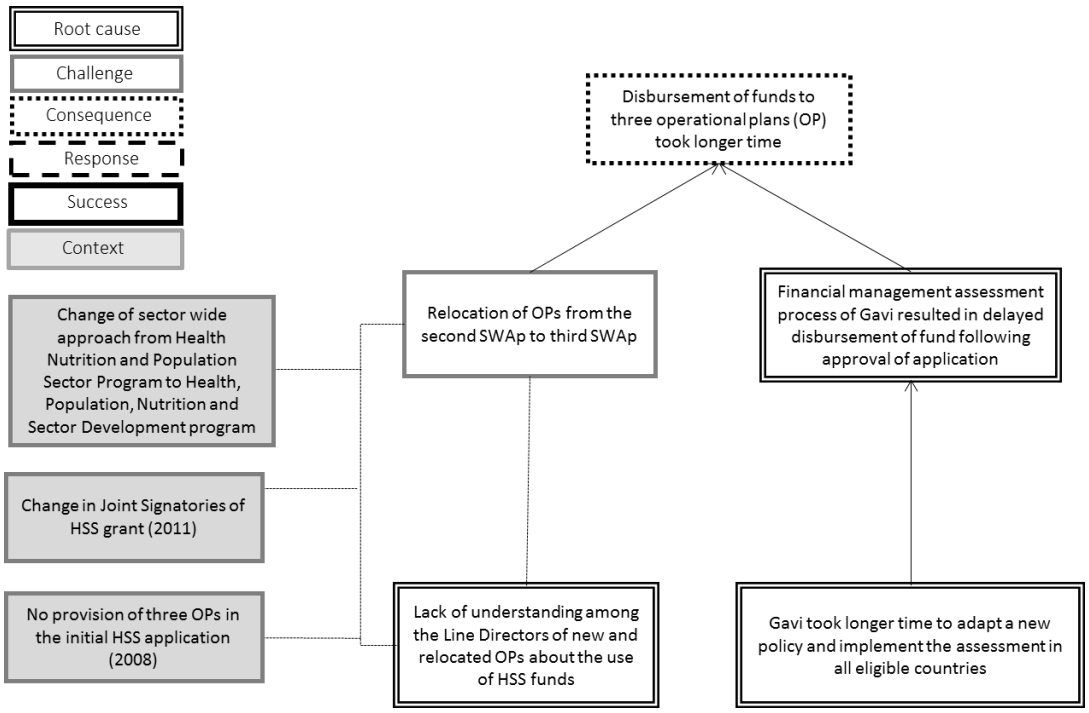
> *The line directors of three operation plans had a gap of understanding regarding the HSS fund utilization; as to how it could be done, the operational plan of sector-wide program was not incorporated there. Therefore, they were confused about how to utilize the money to avoid an audit. It took a very long time to revise the operational plan. It was also time-consuming to revise the sector-wide program by incorporating the operational plan. (National KII)*

Another key informant said:

> *Although we are implementing many activities under the HSS grant, we are still in the dark about what is really going on under this grant. We know everything about ISS grant utilization process and activities, but HSS grant is operated by other wings including EPI. (NationalKII)*

In addition to transition of the HSS grant to different operational plans, additional delays resulted from relocation of the SWPMM, which is responsible for coordinating and preparing the plan, financing and budgeting, managing, reviewing, monitoring, and evaluating the SWAp. This was initially implemented under DGHS in the second SWAp, but later relocated to MOHFW under the third SWAp.

Figure 14: Root cause analysis of taking longer time for receipt of funds from Gavi due to introduction of FMA and relocation of OPs from second SWAp to third SWAp at country level



Recommendation

1. Gavi Secretariat, partners and country stakeholders should begin dialogue prior to the application phase to ensure the submitted proposals are aligned with national health plans. This should be reviewed on an annual basis and contingencies planned for in instances where there is delayed implementation, such as the delayed fund disbursement arising from the FMA process in Bangladesh.

Robustness of finding

Finding 3	Ranking	Robustness criteria
Funds were not disbursed to the implementers of HSS-1 grant activities due to the transition between the second Sector Wide Approach (SWAp) to the third SWAp, which led to a restructuring of HSS grant activities from one Operational Plan to three Operational Plans.	A	The finding is supported by multiple qualitative data sources such as KIIs and document review, which were well triangulated.

Finding 4

Completion of recruitment under HSS-1 grant took longer than planned due to lengthy recruitment process and high staff turnover.

HSS grant activities were also stymied by delayed recruitment of staff by the Planning Wing of MOHFW. The recruitment of the HSS National Coordinator (HSS-NC) was delayed and many other positions were vacant for more than a year, which affected the implementation of downstream activities such as training as well as overall fund utilization.

The recruitment of the National Coordinator (HSS-NC) was completed during the middle of the year 2011 (May 2011), which was supposed to happen in 2010 after the HSS funds were made available. The National Coordinator (NC) was recruited to manage the additional administrative requirements of managing the HSS grant and track the flow of HSS funds and implementation of activities. For example, the position was responsible for holding regular meetings with district health officials of the 13 districts to collect information on HSS implementation issues and progress.

In addition to delays in recruiting the NC, there were also delays in recruiting the DMCH&IOs and Community Maternal and Child Health and Immunization Worker (CMCH&IW). The first recruitment of DMCH&IO began in the early period of 2012; however, recruitment of the 32 DMCH&IOs was only completed by the year 2015 due to high turnover of this post and misalignment of recruitment criteria with job requirements. The MoHFW had to publish the recruitment circular seven times to complete and fill up the vacant post; to mitigate this the GoB also employed a waiting list the to fill DMCH&IO vacancies on a more immediate basis.

DMCH&IOs were tasked with assisting in routine EPI and maternal, newborn, and child health (MNCH)-related activities, providing technical assistance to district- and subdistrict-level managers, implementing and monitoring disease surveillance, overseeing supplementary immunization activities, and supervising and monitoring community group activities in order to strengthen them. To facilitate this, as part of the HSS grant, intensive training was provided to the DMCH&IOs. According to the DMCH&IOs interviewed, this training contributed significantly to improving their skills in terms of implementing HSS activities and immunization program, monitoring the program, and providing technical assistance at different levels. However, frequent turnover of DMCH&IOs and difficulties hiring the personnel for this post limited the effectiveness of this HSS investment (Figure 15). In particular, salary and other logistical support (e.g., vehicle, laptop, printer, and mobile phone) provided from the HSS fund were perceived as being inadequate to DMCH&IOs recruited and were a reason cited for the frequent turnover rate. This was compounded by poor communication and responses to these issues when raised.

> *One of DMCH&IOs left the job due to absence of vehicle support. He informed the absence of vehicle support to the concerned person through letter that it was not possible to continue this job without vehicle support and also not possible to maintain the quality of work. However, he did not get any response to this letter and further he wrote another letter with the reference of the previous one that as he did not get any feedback so it seemed he should not get the facilities and it was not possible for him to continue the job. Finally, he resigned from the post. (Subnational KII)*

It was not possible to ensure vehicle support for all DMCH&IOs due to the lengthy process of approving procurement plans by the MoH. One national-level respondent reported that procurement issues are in the process of being solved.

Recommendations

1. There should be enhanced dialogue, beyond guidelines, between country governments, partners, and the Gavi Secretariat to ensure that HSS operational plans and timelines accurately reflect the time required for required Gavi and in-country processes.
2. To avoid shortage of human resources under Gavi support, country should establish waiting lists for staff during recruitment process.

Robustness of finding

Finding 4	Ranking	Robustness criteria
Completion of recruitment under HSS-1 grant took longer than planned due to lengthy recruitment process and high staff turnover.	A	The finding is supported by multiple qualitative data sources such as KIIs, event observation, and document review, which seemed to be of good triangulation.

Finding 5

Infrastructure development activities were delayed due to a range of root causes, including lower priority given to a small volume of work by the Health Engineering Department (HED), limited coordination between HED and HSS implementers, and challenges associated with construction including a lengthy bidding process and difficulties in implementation in hard-to-reach areas.

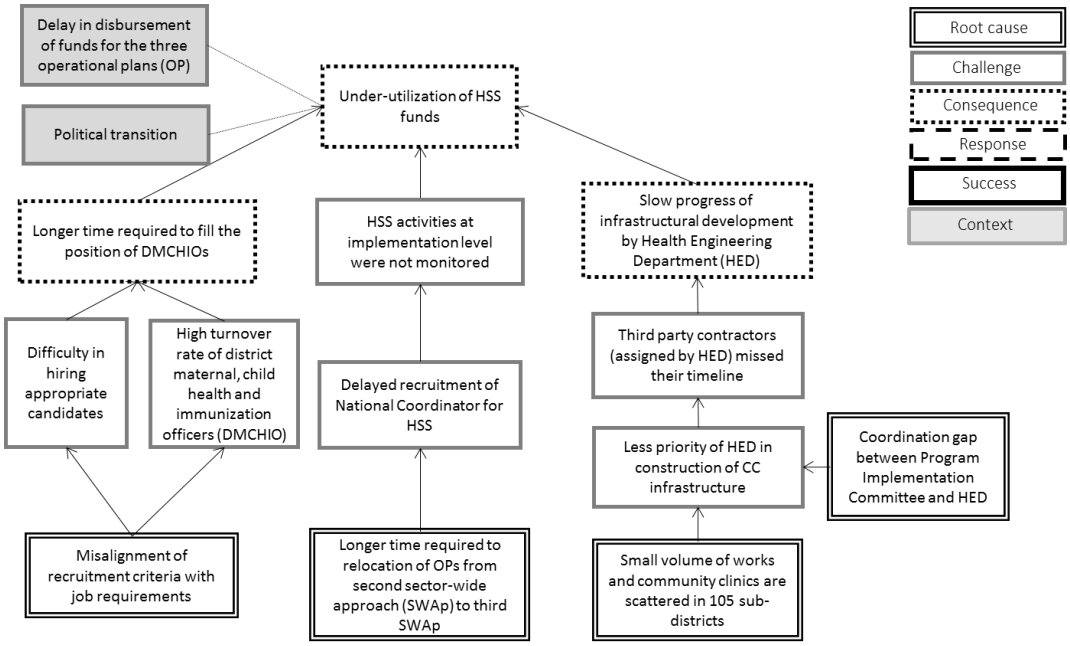
As part of the HSS-1 grant, the Health Engineering Department (HED) was assigned to undertake infrastructure development activities, including the construction of 105 birthing rooms at community clinics and 12 EPI store rooms which had been started earlier. These infrastructure developments were delayed due to a number of underlying root causes (Figure 15). HSS infrastructure activities involved a relatively small volume of work, with community clinics that needed to be renovated or constructed scattered geographically. With the small volume of work, less priority was given to it by the HED. Moreover, progress was also stymied due to limited coordination between the HED and PIC. HED officials were not present at the PIC meetings and were not informed about the discussion and decisions that were taken in the PIC meeting. In addition, there were a number of delays in the process, including a slow open tender process, and the geographical location of infrastructure development to carry the construction materials to these hard-to-reach areas. A key informant stated that:

> *We have to follow regulations due to process, we didn't feel they are barriers; maybe it was not possible to complete all the construction at a time. Some of the construction work took longer time as there were problems of material carrying during rainy season. In some places it was not possible to carry materials for six to seven months due heavy rain; it was really tough to do the work, especially in hilly areas. (National KII)*

A bulk amount of HSS funding was not possible to utilize due to slow progress of HED work. The 2014 Annual Progress Report notes that some of the HSS grant would be utilized throughout the year of 2015

as construction work is still continuing (delivery rooms at the community clinics and remodeling and repairing of existing EPI cold stores). However, it was mentioned by the HED personnel that these activities might be completed by June 2016. Figure 15 shows the causal chain of factors and root causes. It should be noted that proactive leadership of the newly joined Ministry of Health and Family Welfare (MOHFW) official has boosted coordination among the different implementers of HSS grant.

Figure 15: Root cause analysis for challenges of utilization of HSS-1 grant



Recommendation

1. As evidenced by the positive effect of a new leadership, strong coordination and leadership are necessary for implementation of HSS grants given the diverse parties involved in implementation. This should be planned for as part of HSS grant designs.

Robustness of finding

Finding 5	Ranking	Robustness criteria
Infrastructure development activities were delayed due to a range of root causes, including lower priority given to a small volume of work by the Health Engineering Department (HED), limited coordination between HED and HSS implementers, and challenges associated with construction including a lengthy bidding process and	A	The finding is supported by multiple data sources such as KIIs, event observation (observation of ICC meeting), and document review, which were well triangulated.

difficulties in implementation in hard-to-reach areas.

Finding 6

The absence of a monitoring and evaluation framework in the HSS 1 proposal format hindered the implementation of HSS-1 grant. Despite availability of a timeline for implementation, there was insufficient detail regarding the party responsible for implementing each of this activity.

One notable challenge of the Gavi HSS-1 grant was the absence of an M&E log frame. The guidelines at the time, unlike the present HSS guidelines, did not require a monitoring and evaluation framework to be included as part of the application. Reporting systems were not well established for the Gavi HSS grant, which created problems in monitoring and evaluating the impact of the HSS grant on the existing immunization program. Although the HSS application included a National Coordinator, as stated earlier, to track and manage the flow and use of all HSS activities and funds, we noted that it was difficult for the NC to coordinate all 32 districts' activities. This was evidenced by discussion of the need for an assistant coordinator at PIC meetings. This has yet to be implemented.

Another root cause that hampered monitoring activities was the frequent turnover of DMCH&IOs. One of the tasks of the DMCH&IOs was to monitor the HSS work at the field level and report to the NC HSS. As noted earlier, insufficient vehicle support for DMCH&IOs was an obstacle for proper monitoring, as were insufficient monitoring tools for first-line supervisors. Regarding insufficient vehicle and logistic support a respondent stated that:

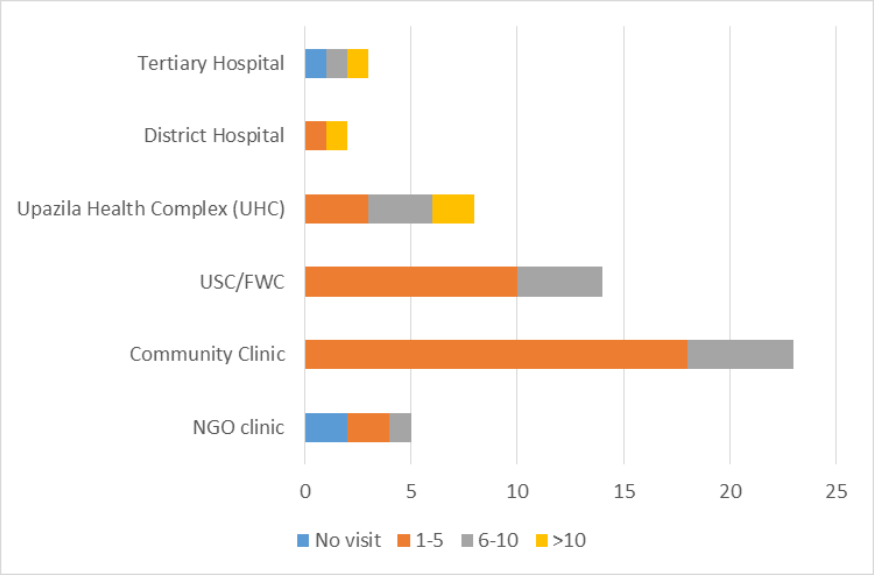
> *Gavi was not responsible for that, it depends on the country. However, some members of government felt jealous. A few development partners were asked to improve the facilities for better job performance. So actually you have to create better job environment to utilize the recruited expertise, otherwise, how they will be utilized supervisors don't go to field, but if the DMCH&IOs have the vehicle support they can pick the supervisors and supervision would be stronger when a government staff is with them. If the government staffs don't go with the DMCH&IOs and any how they reached in the field, health assistants will not obey them. Government staff will go to field only when they get vehicle support. (National KII)*

Results from the HFA (Figure 16) also revealed that the number of supervisory visits to health facilities is insufficient; we also noted limitations in the maintenance of record-keeping as part of the health facility survey.

Recommendation

1. Our findings support the requirement that new HSS applications include a monitoring and evaluation framework and plan to support assessment of the HSS grant. This should be accompanied by appropriate investments in human resources and logistics such as vehicle, supervisory checklists, computer, printers, and internet connectivity (modem) to support high-quality M&E.

Figure 16: Number of supervisory visit in EPI sessions during the last six months in four different districts and city corporations



Robustness of finding

Finding 6	Ranking	Robustness criteria
The absence of a monitoring and evaluation framework in the HSS 1 proposal format hindered the implementation of HSS-1 grant. Despite availability of a timeline for implementation, there was insufficient detail regarding the party responsible for implementing each of this activity.	B	The finding is supported by multiple data sources, both qualitative and quantitative, such as document review and health facility survey data, which were well triangulated. However, lack of a proper record-keeping system poses challenges for the existing data quality.

Finding 7

Observational data suggest that immunization coverage has improved more rapidly in Gavi HSS-1 districts, particularly Phase I districts, in comparison to non-HSS districts.

Despite the delays in implementation of Gavi HSS, as noted above, a number of activities have been implemented that have the potential to improve immunization coverage and equity. These include, as also noted above, infrastructure development (construction, remodeling, and repair of EPI store rooms) and human resource investment (hiring of CMCH&IWs and DMCH&IOs, supervisory training).

An important objective of the Gavi FCE is to assess the contribution of Gavi's HSS support on vaccine coverage improvements and downstream health outcomes. To assess the contribution of HSS to immunization coverage improvements, we compiled results on vaccine coverage using small-area

estimation for Phase I, Phase II, and non-HSS districts in Bangladesh, as shown below. These estimates incorporate the latest 2014 Coverage Evaluation Survey data.

The Gavi FCE small-area estimates show that improvements in third-dose pentavalent coverage and coverage of the fully immunized child were larger in those districts, particularly Phase I HSS districts that were targets of Bangladesh's recently completed HSS-1 grant (Figure 17 and).

Figure 17: Change in DPT3/penta3 coverage from 2011 to 2015 by district

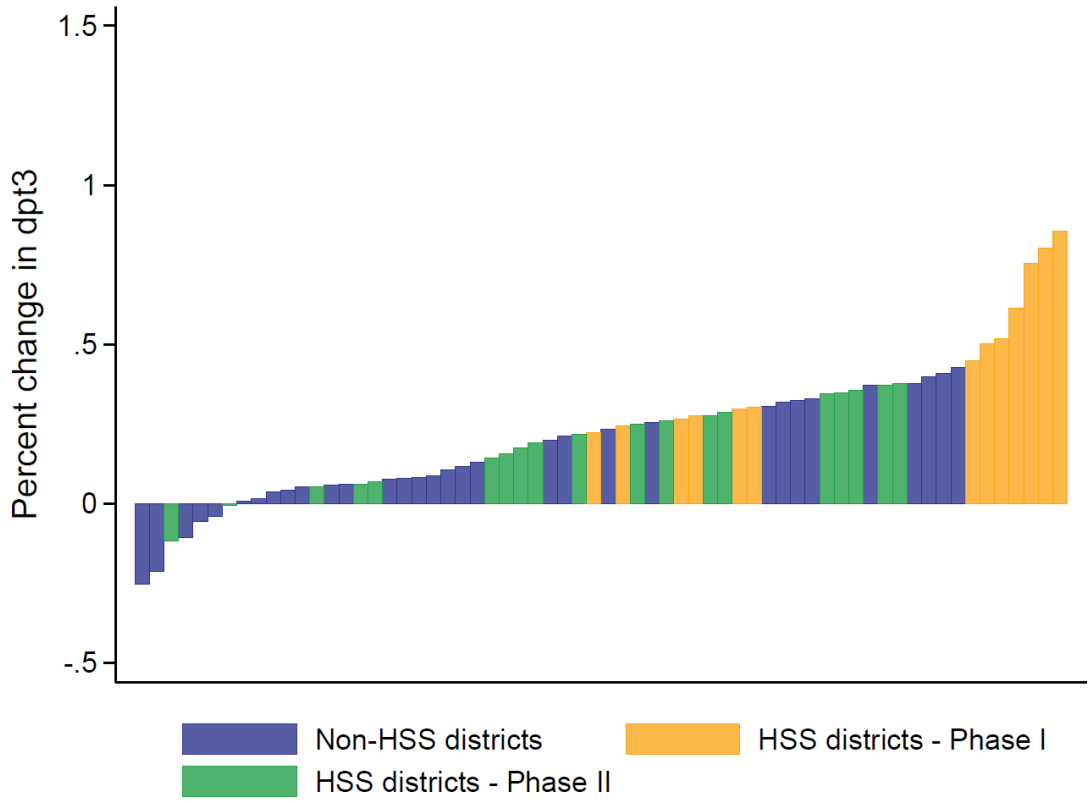
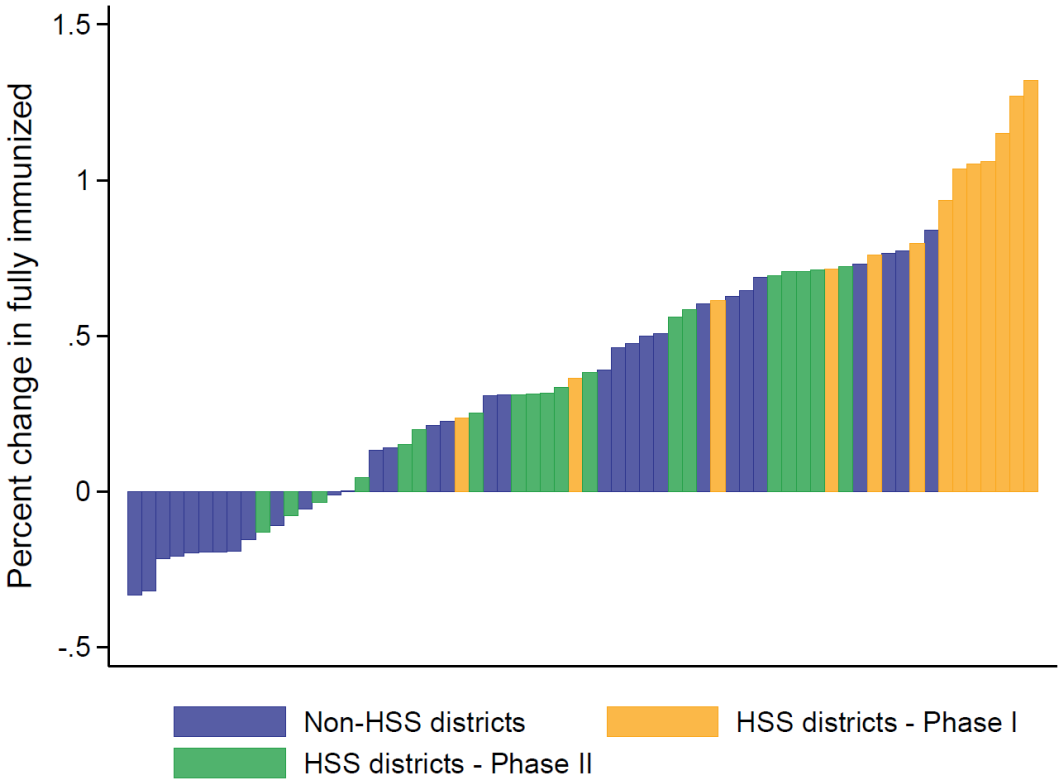


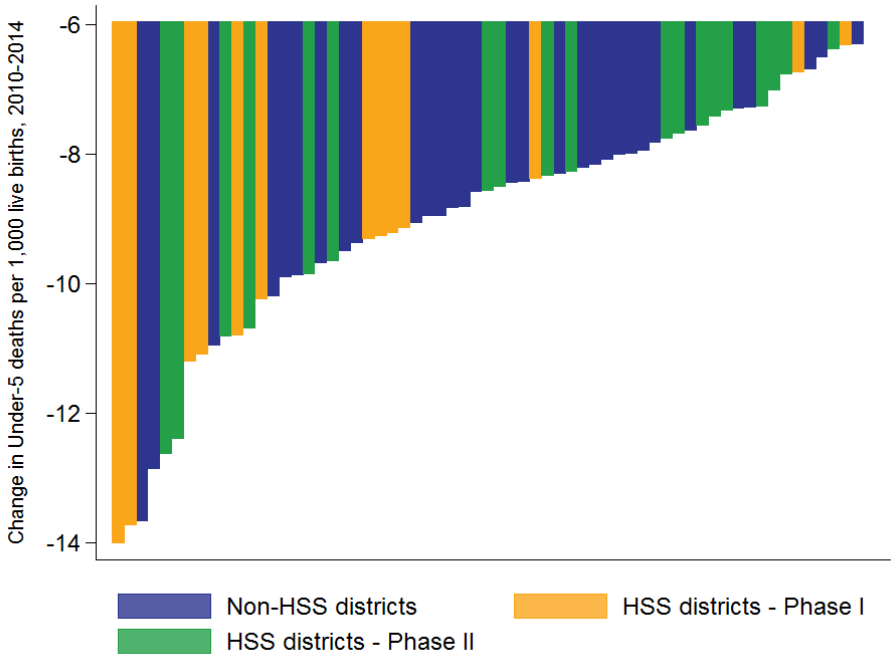
Figure 18: Change in coverage of the fully immunized child (Penta3, Polio3, Measles, BCG) from 2011 to 2015, by districts



We estimated statistically the changes in vaccine coverage associated with HSS using a difference-in-difference model, controlling for changes over the same time period in maternal education at the district level. For third-dose pentavalent coverage, we estimate a non-significant increases ($p>0.05$) compared to non-HSS districts of 0.3% (95% CI -0.1 to 0.8) and 0.1% (95% CI -0.2 to 0.4) for HSS Phase I districts and HSS Phase II districts, respectively. For the coverage of the fully immunized child, we estimated significant increases ($p<0.05$) compared to non-HSS districts of 1.9% (95% CI 0.8 to 3.1) and 0.9% (95% CI 0.0 to 1.8) for HSS Phase I districts and HSS Phase II districts, respectively. We caution, however, that this analysis is based on observational data and does not control for other potential confounders, for example, implementation of other health system efforts in Bangladesh.

Although less strongly correlated with HSS, we also noted greater improvements in child mortality in HSS districts (Figure 18).

Figure 19: Change in under 5-mortality from 2011 to 2015, by districts



Recommendation

1. Continued evaluation and a more comprehensive understanding of why coverage has improved in some HSS districts and not other HSS districts will help to inform future implementation of Gavi HSS grants as well as other system strengthening activities.

Robustness of finding

Finding 7	Ranking	Robustness criteria
Observational data suggest that immunization coverage has improved more rapidly in Gavi HSS-1 districts, particularly Phase I districts, in comparison to non-HSS districts.	C	The finding is supported by secondary data analysis process but is observational in nature.

Finding 8

The application for Gavi HSS-2 support involved a broad group of stakeholders in the design of the proposal. Despite this, after receiving the initial application in January, the IRC asked for a resubmission. The root causes of this were a short preparation period, inadequate technical assistance, and insufficient

consideration of alignment with national health plans. The resubmitted proposal focused on two activities (EVM and surveillance supported by WHO and UNICEF).

In 2013, Gavi restructured the HSS support window to better link cash-based support with immunization outcomes and to introduce stricter requirements for the monitoring and evaluation of HSS grants. The GoB submitted an Expression of Interest (EOI) to Gavi in May 2014. On November 10, 2014, the country shared the HSS roadmap and announced the members of the coordination committee during a consultative meeting on a new funding application for Gavi-HSS program. The members were from MoHFW, EPI, CBHC, WHO, and UNICEF, and focal points from MoHFW and EPI were present to support the consultants hired by WHO and UNICEF.

MoHFW convened a workshop on December 10-11 at EPI headquarters, which included the new application coordination committee and the two consultants hired by WHO and UNICEF. Stakeholders commenced implementation of the roadmap, including collection of relevant documents, analysis of bottlenecks and gaps, formulation of objectives, identification of implementation and monitoring and evaluation activities. Stakeholders decided that application drafting would take place from the last week of December 2014 to the first week of January 2015. In comparison to other countries, this was a notably short time frame for HSS application development. Through consultative meetings and workshops, responses and feedback received from different stakeholders was collected to identify the health system bottlenecks. After an endorsement by the highest decision-making body for the HSS, the respective committee (LCG-Local Consultative Group), the application was submitted on January 25, 2015. The application was recommended for resubmission by the IRC. Following the IRC review, stakeholders made a decision to resubmit a bifurcated application with a first component submission in September 2015 and the second slated for Q3 2016.

Despite the recommendation for resubmission, a positive aspect of the HSS application process was the broad network of stakeholders that participated in the application process. Notably, this was also a recommendation that arose out of the Gavi FCE evaluation of HSS-1. Figure shows the network of partners that collaborated on the preparation of the HSS-2 application. Thirty-nine nodes were named through the initial nine surveys conducted, with a median of four connections for each node. The core of this network is relatively dense and shows a relative mix of organization types occupying the center with the majority of nodes belonging to the EPI but also WHO and UNICEF.

When nodes are sized by their number of connections (i.e., degree centrality), EPI are not the most connected, which is not typically observed in immunization networks. Instead, key Alliance partners and non-EPI MOH actors are more connected (see Figure 21). In contrast to other immunization networks, this HSS application network features a high representation of MOH actors outside of the EPI, which can be considered a success for the process in Bangladesh. The consultants hired to assist with the HSS-2 application (beige) are at the margins of the network core, demonstrating that they were not perceived to have been most central by others, and yet are more central in this case that in Zambia's HSS-2 network, for example.

We identified a number of root causes of the unsuccessful initial submission of the HSS-2 application, as noted in Figure 20. One key root cause was the complicated nature of the Gavi HSS application process, which requires involvement of different departments and OPs that have their own objectives to meet. This challenge was coupled with limited capacity of the government to meet the application

requirements (within the context of managing multiple Gavi new vaccine support windows), which led to a reliance on technical assistance.

Figure 20: Network of partnership for the HSS-2 application development

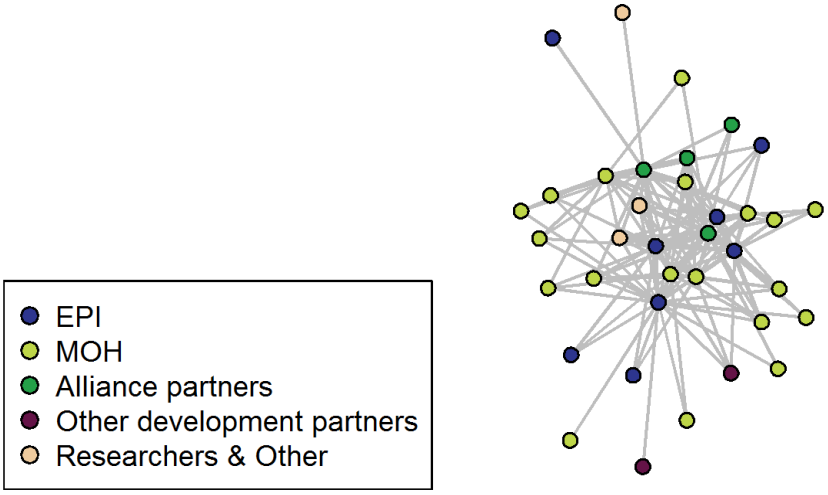


Figure 21: Network of partnership for the HSS-2 application development, nodes sized by degree of centrality

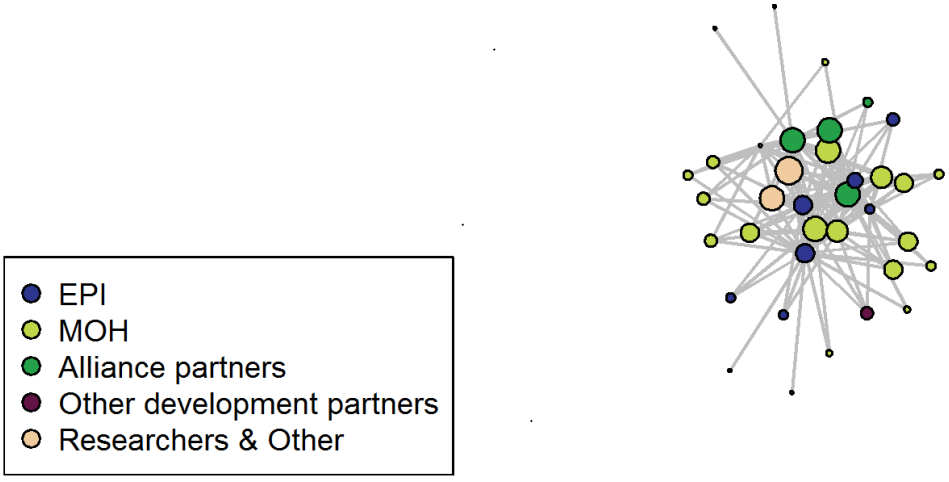
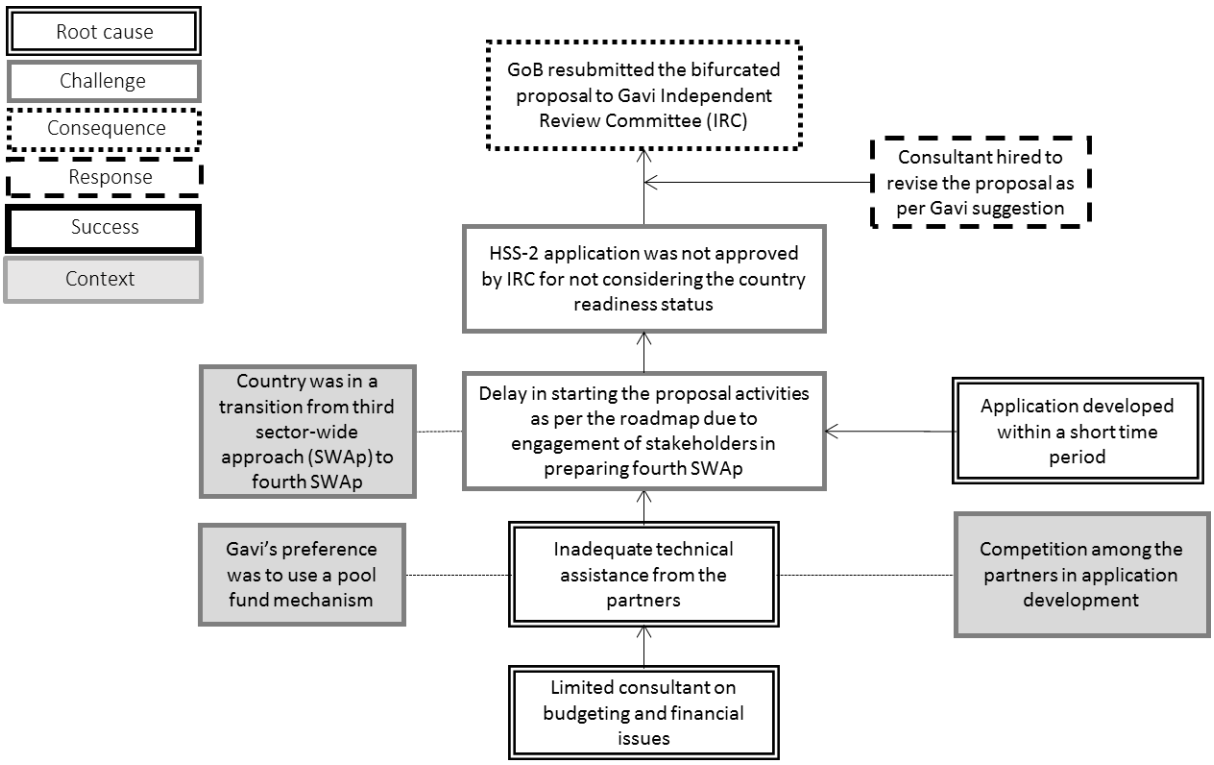


Figure 20: Root cause analysis for not approving the initial HSS-2 application by IRC because the application timeline was not aligned with the country health plan.



A respondent noted the following:

> *We (GoB) are dependent on WHO and UNICEF for hiring technical assistance for Gavi proposal development. GoB seeks support for TA, and they informed that they have expert consultants on Gavi proposal and send CV to the GoB. Though GoB has freedom to choose the consultant, we rely on them and give priority on their recruited consultants. (National KII)*

A development partner indicated that it was GoB that chose the consultant; however, other country stakeholders remarked that GoB only submitted written requests to WHO and UNICEF for technical assistance. GoB merely approved consultants who were recruited through partners' internal processes. Apart from the semantics subtleties between "choosing" and "approving" in this context, country stakeholders perceived their involvement in the selection process to be minimal.

Although technical assistance was secured through partners, a number of shortcomings about its provision were identified. First, insufficient time was allocated for the proposal preparation (commencing in December for a January submission date), in part because country stakeholders were occupied with planning the transition from the third SWAp to the fourth SWAp (beginning in 2016). In addition, because the timing of application preparation overlapped with the holiday season, there was only a small pool of available consultants from which to recruit. Secondly, respondents at the national level felt that the consultants hired by UNICEF and WHO were limited in their capacity to prepare a high-quality application because of limited knowledge of country context and financial matters.

Both the consultants had weaknesses in budgeting and related financial issues. If one of them had been skilled in handling financial issues then it would have been possible to minimize the gap, identified in the IRC. They were both good, but not in all issues.... The lead consultant was aware about the national health plan but not aware with the financial/budgetary provisions of Gavi. (National KII)

Lastly, technical assistance provided though the WHO pre-review was lacking because it did not provide adequate guidance about how to address gaps in the application, gaps that were flagged by the IRC in recommendation for GoB to resubmit the application.

In addition to technical assistance, another root cause was the inadequate consideration given to country readiness in terms of alignment of HSS grant with national health plans. One of the IRC's recommendations to country for the application resubmission was to clarify whether and how the HSS funds would be utilized within a pooled funding mechanism or as a specific HSS grant. Gavi preferred a pool funding mechanism instead of a bilateral transaction regarding new HSS application. However, the coordinating committee and consultants preparing the application failed to consider the transition of the third SWAp to fourth SWAp in 2016 and to align the grant with the upcoming SWAp. An important question for follow-up concerns is why stakeholders involved in the preparation of the application were not aware of this condition. The oversight is noteworthy given the country's recent experience in past years with the slow utilization of the HSS-1 grant during a previous transition of national health plans (second SWAp to third SWAp), as indicated in a previous section.

For resubmission of the HSS application, stakeholders decided to bifurcate the proposal, with one part designed as an HSS-specific grant and the other designed for the pooled fund. With technical assistance from a new WHO consultant, the GoB resubmitted the first and smaller component in September 2015, with the proposal focusing on Effective Vaccine Management (EVM) and surveillance in no pooled funding mechanism. Views from some stakeholders were that the smaller component was driven primarily by partners rather than government and was supply-oriented rather than demand-oriented. In other words, the HSS investments on only two activities such as surveillance and EVM were more reflective of partner activities than based on a comprehensive assessment of immunization delivery bottlenecks.

As the support for Surveillance Medical Officer (SMO) is being withdrawn, it is the concerning matter for WHO to continue this SMO support in the name of strengthening routine EPI. Indirectly WHO get the scope to work with EPI. However, EPI does not lose in that case. If Gavi funds are not allocated for this purpose, WHO seeks funding from other donors. (National KII)

On the other hand, a representative from development partners indicated that, with this bifurcated proposal, the country would able to introduce new vaccines and continue surveillance activity and cold-chain management activities prior to finalizing the new SWAp, and thus the country will benefit from this earlier HSS grant.

Recommendations

1. As much as possible, countries should take a lead role in designing the HSS grant application. This would be facilitated by ensuring adequate preparation time for the development of HSS applications, noting the short time period available for the initial HSS application.

2. Where technical assistance is required, countries, Gavi, and partners should prioritize hiring of local consultants for better understanding of country context in developing the application instead. Orientation for local consultants around Gavi procedures is a critical element. Where external technical assistance is required, adequate time for consultation and orientation of country context should be built into application development plans.

Robustness of finding

Finding 8	Ranking	Robustness criteria
The application for Gavi HSS-2 support involved a broad group of stakeholders in the design of the proposal. Despite this, after receiving the initial application in January, the IRC asked for a resubmission. The root causes of this were a short preparation period, inadequate technical assistance, and insufficient consideration of alignment with national health plans. The resubmitted proposal focused on two activities (EVM and surveillance supported by WHO and UNICEF).	B	The finding is supported by multiple qualitative data sources such as document review, KIIs and partnership method.

Cross-stream analysis

Major point 1

There was strong adaptive management capacity of the EPI in handling challenges regarding repeated scheduling in the joint launch of PCV and IPV as well as the decision to postpone HPV vaccine demonstration.

Adaptive management capacity of EPI has been observed in its handling of challenges regarding repeated schedule changes in the joint launch of PCV and IPV as well as its decision to postpone HPV vaccine demonstration. Facing a range of challenges from vaccine supply, competing demands of multiple support streams, funding delays, and various contextual factors such as chronic political unrest, we noted throughout multiple levels of the system the ability to adapt to challenges and identify solutions. In this report and in the previous report we have noted various factors that likely contribute to EPI's management capacity. These include experienced government officials and EPI staff who have the facility to navigate challenges, a motivated health workforce at all levels of the health system, and strong partnerships at all levels.

Recommendation

1. The success of the Bangladesh EPI in adaptively managing the MR campaign and PCV/IPV introductions highlights the important of investing in and maintaining management capacity at multiple levels of the immunization system.

Major point 1	Ranking	Robustness criteria
There was strong adaptive management capacity of the EPI in handling challenges regarding repeated scheduling in the joint launch of PCV and IPV as well as the decision to postpone HPV vaccine demonstration.	A	The finding is supported by multiple qualitative data sources such as KIIs, FCI, and document review.

Major point 2

While technical assistance and partnership have been strong for new vaccine introductions, our findings suggest that technical assistance for HSS has been more limited.

In Bangladesh, EPI has demonstrated largely successful introductions of multiple vaccines, including PCV and the MR campaign reported on last year. This has been supported by a robust immunization system and noted motivation and enthusiasm of its workforce at all administrative levels. Traditional EPI partners have also played a significant role in supporting the EPI in launching new vaccines, as noted earlier in this report. This has included technical assistance for procurement and supply of vaccines and other preparatory activities, from training to social mobilization. This supports previous findings of strong partner involvement around the MR campaign in 2014.

In the context of HSS, however, technical assistance for preparation of the HSS application was found to be less optimal than that experienced for new vaccine introductions. For example, TA consultants had limited knowledge of country context and financial and budgetary issues, and, as we note, the WHO pre-review did not identify issues that led to the need for resubmission. GoB stakeholders and partners postulated different reasons for the effectiveness of TA, which included the contextual factors of time constraints, timing and duration of the proposal submission, transition of the key people (government officials), complicated HSS guidelines, and less understanding toward the right design. We also note the potential for technical assistance leading to reduce country ownership, particularly in the context of the bifurcated HSS proposal.

Recommendations

1. Lessons can be learned from the provision of TA from new vaccine introductions for HSS and other more complicated streams of support. A focus of TA should be on building capacity of EPIs to successfully introduce new vaccines and to strengthen systems through Gavi's HSS grant. EPI could benefit from an assessment of its strengths and weakness in application design to determine where to build capacity for designing and preparing the HSS application as well as implementation of the grant.
2. Following from the first recommendation, EPI should take the lead in all aspects of the HSS grant application process and prioritize technical assistance from within the government or by in-country TA providers who are familiar with the country context and the health system. Internal technical assistance would likely strengthen the application design and local capacity, while also fostering country ownership of preparation process.
3. Proactive and early planning on the part of EPI stakeholders could help to establish if and where external technical assistance is needed, to identify and recruit potential providers in a timely fashion and arrange orientation sessions to familiarize them with the country context. External TA providers could also be twinned with local TA providers as a way to mutually build capacity.

Major point 2	Ranking	Robustness criteria
While technical assistance and partnership have been strong for new vaccine introductions, our findings suggest that technical assistance for HSS has been more limited.	A	The finding is supported by multiple qualitative data sources such as KII, partnership survey, FCI, and document review.

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