



Lessons Learned and Good Practices

Country-Specific Case Studies
on Immunization Activities
During the COVID-19 Pandemic

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ACRONYMS

ASHA	Accredited Social Health Activist
AEFI	adverse events following immunization
BCG	Bacillus Calmette–Guérin
bOPV	bivalent oral poliovirus vaccine
cVDPV	circulating vaccine-derived poliovirus
C4D	Communication for Development
COVAX	COVID-19 Vaccines Global Access
DHIS	District Health Information Software
DOH	Department of Health
DTP	diphtheria, tetanus, pertussis
EPI	Expanded Programme on Immunization
Gavi	the Vaccine Alliance (formerly: Global Alliance for Vaccines and Immunization)
GPEI	Global Polio Eradication Initiative
IDP	internally displaced persons
IEC	Information, Education and Communication
IPC	infection prevention and control
IPV	inactivated poliovirus vaccine
LGU	Local Government Unit
MCV	measles-containing vaccine
MNTE	Maternal and Neonatal Tetanus Elimination
MOH	Ministry of Health
MOHFW	Ministry of Health and Family Welfare
MOPH	Ministry of Public Health
mOPV	monovalent oral poliovirus vaccine
MR	measles and rubella vaccine
NDOH	National Department of Health
NEOC	National Emergency Operations Centre
NGO	non-governmental organization
ODK	Open Data Kit
OPV	oral poliovirus vaccine
PEOC	Provincial Emergency Operations Centre
PNG	Papua New Guinea
PPE	personal protective equipment
RCM	Rapid Convenience Monitoring
SIA	supplementary immunization activity
SMNet	Social Mobilization Network
SMS	Short Message Service
SOP	standard operating procedure
TPM	Third-Party Monitoring
UNICEF	United Nations Children’s Fund
UN OCHA	United Nations Office for Coordination of Humanitarian Affairs
VPD	vaccine-preventable disease
VDPV	vaccine-derived poliovirus
WASH	Water, Sanitation and Hygiene

EXECUTIVE SUMMARY

Health systems throughout the world have been rapidly overwhelmed and compromised by the COVID-19 crisis. Essential health services and routine immunization programmes that are normally strengthened by supplementary immunization activities (SIAs) and national campaigns have been severely affected. WHO's second pulse poll on continuity of essential health services during the COVID-19 pandemic highlighted that, of the 61 countries where national respondents reported on the current status, 85 per cent reported lower levels of vaccination in May–June 2020 than January–February 2020. The main reasons for the disruption to immunization services were low availability of personal protection equipment (PPE) for health workers (49 per cent), travel restrictions (40 per cent), and low availability of health workers (43 per cent).¹ As of April 2021, 50 countries have had at least one vaccine-preventable disease (VPD) campaign postponed during the pandemic.²

As the global health community takes steps to recover lost ground, this report aims to highlight the good practices and lessons learned from countries that have reinstated immunization campaigns despite the wide-reaching impact and challenges caused by COVID-19. To guide countries in this process, WHO developed a decision-making framework³ and operational guidelines⁴ to help countries establish the risks and benefits of conducting a campaign, and the principles to consider during planning and implementation to ensure the safety of communities.

This report documents the challenges and achievements of six countries, learning from the experiences of countries that have been able to reinstate campaigns. Data, information and insights were collected between February and April 2021 from various sources, including interviews with United Nations Children's Fund (UNICEF) and World Health Organization (WHO) regional and country office staff, documents and published articles. Six countries with robust and valuable experience implementing immunization campaigns – Angola, Bangladesh, India, Papua New Guinea, the Philippines and Yemen – were included as case studies.

These case studies will form part of a learning initiative for national and subnational service planners, managers and providers to enable:

- Maintenance of essential health services during the COVID-19 pandemic
- Immunization service recovery in the post-acute phase
- Sustained transformation and strengthening of immunization services in the post-pandemic phase

Angola

In May 2019, Angola reported an outbreak of circulating vaccine-derived poliovirus (cVDPV) that rapidly spread throughout the country.⁵ The country implemented an outbreak response featuring several subnational campaigns. The response was due to be completed by March 2020, but was interrupted in its final stages, because the COVID-19 pandemic caused reduced service delivery capacities across all sectors. As services eventually resumed, an inactivated poliovirus vaccine

¹ WHO. Special feature: immunization and COVID-19. WHO [Internet]. 2020 June [cited 2021 Jun 1]; Available from: https://www.int/immunization/GIN_June_2020.pdf

² WHO. Immunization services begin slow recovery from COVID-19 disruptions, though millions of children remain at risk from deadly diseases – WHO, UNICEF, Gavi [Internet]. 2021 [cited 2021 Apr 25]. Available from: <https://www.who.int/news/item/26-04-2021-immunization-services-begin-slow-recovery-from-covid-19-disruptions-though-millions-of-children-remain-at-risk-from-deadly-diseases-who-unicef-gavi>

³ WHO. Framework for decision-making: implementation of mass vaccination campaigns in the context of COVID-19 [Internet]. 2020 May [cited 2021 Apr 21]. Available from: https://www.who.int/publications/i/item/WHO-2019-nCoV-Framework_Mass_Vaccination-2020.1

⁴ WHO. Maintaining essential health services: operational guidance for the COVID-19 context interim guidance [Internet]. [cited 2021 Apr 14]. Available from: <https://www.who.int/publications/i/item/WHO-2019-nCoV-essential-health-services-2020>

⁵ WHO. Weekly Bulletin on Outbreaks and Other Emergencies, Week 26 24-30 June 2019 [Internet]. [cited 2021 Mar 25]. Available from: <https://apps.who.int/iris/bitstream/handle/10665/325649/OEW26-2430062019.pdf>

(IPV) and bivalent oral poliovirus vaccine (bOPV) campaign was implemented nationwide, covering all 18 provinces in the country. Additionally, measles and rubella (MR) vaccinations were integrated in six provinces that reported confirmed measles outbreaks. Alongside the campaign, the WHO office in Angola, the Ministry of Health (MOH) and partners established a system for reporting negative rumours that circulated online regarding COVID-19 vaccination and essential health services, in efforts to dispel potentially harmful misinformation that could affect vaccination coverage and the COVID-19 response. The Angola case highlights the complex reality of implementing a campaign during a pandemic; it struggled to achieve high coverage rates owing to a change in campaign strategy that resulted in community access challenges. However, the lessons learned from this campaign have helped to inform and improve planning for the COVID-19 Vaccines Global Access (COVAX) roll-out, with Angola becoming the first country in the East and Southern Africa region to receive a delivery of the COVID-19 vaccine.

Bangladesh

Measles cases throughout Bangladesh have been steadily rising for the past five years; the incidence rate increased from 1.6 per million people in 2015 to 29 per million in 2019.⁶ With the government's goal to eliminate measles from the country by 2023, Bangladesh coordinated a six-week nationwide MR campaign. The campaign was initially planned for February 2020, but COVID-19 delayed it by 10 months. It was eventually implemented in December with rigorous infection prevention and control (IPC) measures in place, successfully reaching 36 million children. In a first for the country, the campaign was fully digitized, using e-tools and smartphone applications to develop online microplans and collect monitoring data from the field. This significantly eased pressure on campaign staff and volunteers during a period of strain for the country's health service and helps pave the way for future SIAs and routine services to replicate this technology.

India

After a break in immunization services due to the risk of COVID-19, the Indian government authorized essential services to restart across the country in May 2020, enabling routine immunization and a subnational polio campaign to be implemented. UNICEF, WHO and partners supported state and local governments to initiate a robust communication strategy, informing communities of how best to access immunization services while continuing to protect against COVID-19. Guidelines from the Ministry of Health and Family Welfare (MOHFW) required all states to practise physical distancing, handwashing and respiratory hygiene. The modality of immunization service delivery was also determined according to the status of COVID-19 transmissions within each area, to help limit the spread while enabling essential health services to resume.

Papua New Guinea

The large 2018 outbreak of cVDPV type 1 in nine provinces of Papua New Guinea was declared over by WHO in December 2019. However, given challenging terrain and a predominantly rural population, routine immunization coverage rates remain well below the level necessary to protect children from re-emerging cases. During a period of relatively low COVID-19 transmission in November 2020, it was deemed necessary to carry out a national polio immunization campaign, which achieved 91 per cent administrative coverage. Health workers and volunteers attended virtual training on how to implement IPC measures, while UNICEF and WHO staff made daily broadcasts on the national radio station to inform communities of these measures and encourage attendance. UNICEF and WHO developed tailored communication messaging to educate communities on the importance of polio vaccination during the pandemic, integrating this messaging with COVID-19 awareness-building activities. The campaign integrated the delivery of vaccines with the provision of vitamin A and deworming tablets. For remote communities, these interventions provide essential health services to children that rarely have access to medical care.

Philippines

In 2020 the Philippines faced significant risk from an ongoing VDPV2 outbreak (first detected in September 2019) and a potential measles outbreak due to low-coverage rates. With health services strained owing to the COVID-19 response, there was a strong need to mitigate against the risk of further, potentially more severe outbreaks. The MR-OPV SIA was

⁶ UNICEF Bangladesh Country Office. Measles-Rubella Vaccination Campaign Rationale [PowerPoint]. 2020 [cited 2021 Mar 25].

conducted across 11 regions in total; 5 regions in October and November 2020, with the remaining 6 regions in February 2021.⁷ The campaign was managed by the Department of Health (DOH), supported by UNICEF, WHO and other partners. Vaccination sites throughout the country were required to be well ventilated and disinfected regularly and provide sufficient space for physical distancing. In certain sites, vaccination teams built clear screens at each vaccination station, between the vaccinator and the child and caregiver. The implementing partners adopted a “whole-community” approach to social mobilization activities, prompting an enthusiastic response across all areas of society and helping to boost coverage rates.

Yemen

After the initial suspension of immunization services in March 2020, Yemen conducted a subnational diphtheria campaign in July, followed shortly by a subnational polio campaign. The lessons learned from these two campaigns, such as the need for advanced community engagement and stronger coordination,⁸ were utilized to implement a national polio campaign in November and December 2020, reaching more than 5 million children. As part of UNICEF’s Communication for Development (C4D) strategy, the support of adolescent girls and boys was incorporated, by asking them to use their youthful understanding of social media to encourage open discussion among communities and their own families, regarding the importance of being vaccinated. Against the backdrop of ongoing conflict, increasingly challenging humanitarian access and growing COVID-19 transmission, campaign staff at the national, regional and local level coordinated an impressive campaign with several good practices that can be replicated.

As more countries take steps to reinstate immunization services and adapt their programmes to the COVID-19 context, the practices and principles explored throughout these case studies can be drawn upon. Notably, it is imperative to secure engagement and support for the campaign at all levels; success is dependent on national and local government leadership, multi-agency involvement, country commitment and community knowledge. Additionally, there is a clear need for planners to adapt global health guidelines to their own country context, ensuring safety and quality standards are met while understanding how best to engage their local communities.

The high-level good practices and lessons learned illustrate the need for collaboration and co-production at all levels, to aid the immediate recovery of immunization services and help progress to a sustained transformation of services, providing vaccines reliably to every single child.

High-level good practices

1. Utilize WHO’s framework for decision-making and operational guidelines.
2. Implement comprehensive, consistent and creative social mobilization activities.
3. Build a clear coordination mechanism between national and local government, UNICEF, WHO and the country’s COVID-19 task force.
4. Identify hard-to-reach children and take extra steps to engage these communities.
5. Protect health workers, volunteers and communities from COVID-19 transmission.
6. Apply robust monitoring and evaluation (M&E) activities, using technological innovations where possible.
7. Use the campaign as an opportunity to strengthen routine immunization services.

High-level lessons learned

1. Standardize planning and training well in advance of the campaign.
2. Grow the health and volunteer workforce.
3. Integrate campaigns with high-impact interventions when possible.
4. Embrace the use of e-tools to support microplanning and campaign monitoring.
5. Engage a range of non-health actors ahead of the campaign.
6. Encourage government ownership and leadership to support successful implementation.

⁷ UNICEF. Measles-Rubella Oral Polio Vaccine SIA Activity Amidst COVID-19 Pandemic; The Philippines Experience. [cited 2021 Mar 25]

⁸ Ongwae, K., Sule, V., et al. Lessons from Yemen: Diphtheria and Polio Campaign in the Context of COVID-19. *Glob J Health Sci* [Internet]. 2020;12(12). Available from: <https://doi.org/10.5539/gjhs.v12n12p141>

INTRODUCTION

Immunizations are among the greatest advancements in global health, protecting children from life-threatening diseases and preventing up to three million deaths a year.⁹ Before the COVID-19 pandemic, the number of children vaccinated annually reached the highest level ever reported: more than 116 million children, equating to 86 per cent of all infants born.¹⁰

The establishment of the Expanded Programme on Immunization (EPI) in 1974 provided a pathway for all children to have access to life-saving vaccines. At the time of its launch, the programme included vaccines against six diseases: tuberculosis, diphtheria, tetanus, pertussis, measles and polio. Now more than 20 diseases can be prevented by immunization. Since 2010, 116 countries have introduced vaccines that they did not previously have access to, including those against pneumonia, diarrhoea, cervical cancer, typhoid, cholera and meningitis.¹¹

To bolster routine immunization coverage provided by EPI, SIAs or mass vaccination campaigns are an effective and commonly used strategy to prevent or respond to disease outbreaks, typically targeting children who are harder to reach or living in underserved communities. Vaccination campaigns provide an opportunity to strengthen routine immunization and primary health care services by developing national capacity and resources, reducing inequities in service delivery and improving immunization practices.¹² Countries without high routine immunization coverage rely heavily on these activities to reach sufficient coverage rates and effectively protect children against VPDs. Over the course of the next decade, the Immunization Agenda 2030 (IA2030) aims to avert an estimated 50 million deaths by extending immunization services to consistently reach zero-dose or under-immunized children.¹³

However, in 2020, global immunization services suffered a significant setback with the onset and ongoing impact of the COVID-19 pandemic. With health services severely strained, deficiencies in essential services and immunization programmes have caused increased indirect morbidity and mortality. UNICEF warned of an alarming decline in the number of children receiving life-saving vaccines around the world. The second round of the WHO pulse survey found that despite some recovery over the course of 2020 and 2021, 37 per cent of respondent countries still reported experiencing disruptions to routine immunization services. At the time of writing, 60 mass campaigns were postponed in 50 countries, affecting an estimated 228 million people, mostly children.¹⁴

Campaigns to vaccinate against measles, one of the world's most contagious diseases, have been the most affected. Measles campaigns account for 23 of the postponed SIAs, affecting an estimated 140 million people.¹⁵ Many have now been delayed for more than a year. The reasons for postponement vary between countries but have included national lockdowns and travel restrictions, diversion of health workers and resources to focus on the COVID-19 response, supply chain disruptions that affect the availability of vaccines and PPE, community reluctance and the temporary closure of health facilities.

⁹ UNICEF. Immunization [Internet]. 2021 [cited 2021 May 17]. Available from: <https://www.unicef.org/immunization>

¹⁰ UNICEF, WHO, Gavi, The Vaccine Alliance, et al. Immunization Agenda 2030 [Internet]. 2021 Apr [cited 2021 May 17]. Available from: <https://www.immunizationagenda2030.org/>

¹¹ Ibid.

¹² WHO. Planning and Implementing High-Quality Supplementary Immunization Activities for Injectable Vaccines Field Guide [Internet]. 2016 [cited 2021 Apr 21]. Available from: <http://www.who.int>

¹³ Ibid.

¹⁴ WHO. COVID-19 continues to disrupt essential health services in 90% of countries [Internet]. 2021 [cited 2021 May 17]. Available from: <https://www.who.int/news/item/23-04-2021-covid-19-continues-to-disrupt-essential-health-services-in-90-of-countries>

¹⁵ Ibid.

Fortunately, even with the challenging impact of the pandemic, some countries have been able to implement mass vaccination campaigns and resume routine services. WHO developed a decision-making framework¹⁶ and operational guidelines¹⁷ to help countries establish the risks and benefits of conducting a campaign and how it might be safely implemented without increasing COVID-19 transmission.

This report documents the lessons learned and achievements of six countries, to learn from the experiences of those that have been able to reinstate campaigns. These case studies will form part of a learning initiative for national and subnational service planners, managers and providers to enable:

- Maintenance of essential health services during the outbreak
- Immunization service recovery in the post-acute phase
- Sustained transformation and strengthening of immunization services in the post-pandemic phase

The case studies explore good practices, successes, challenges and lessons learned, with the aim of supporting more countries to effectively implement immunization services while managing the threat of COVID-19. This report can be used for technical guidance and advocacy, as the world now moves to vaccinate millions of children that have experienced delays in essential services and to support the strengthening of immunization service delivery in a post-pandemic world.



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¹⁶ WHO. Framework for decision-making: implementation of mass vaccination campaigns in the context of COVID-19 [Internet]. 2020 May [cited 2021 Apr 21]. Available from: <https://apps.who.int/iris/handle/10665/332159>

¹⁷ WHO. Maintaining essential health services: operational guidance for the COVID-19 context interim guidance [Internet]. [cited 2021 Apr 14]. Available from: <https://www.who.int/publications/i/item/WHO-2019-nCoV-essential-health-services-2020>

METHODOLOGY

Objectives

Exploring and learning from the experiences of countries that have reinstated vaccination campaigns during the ongoing COVID-19 pandemic is critical for informing and guiding other countries as they begin to do the same. This learning initiative will emphasize a collection of lessons from countries to inform action within and beyond the health sector, identify and scale up effective interventions, promote informed action at various levels of the immunization system and facilitate the sharing of experiences between countries. In this document, “good practices” are defined as steps or processes that appear to have worked well and could be replicable, and “lessons learned” are defined as insights that were unexpected and/or generate recommendations for changes to future programmes.

The main objectives were to:

1. Collect detailed programme experiences from countries that reinstated campaigns or routine services against VPDs during the COVID-19 pandemic.
2. Identify examples of good practices and lessons learned to support countries interested in reproducing and scaling similar programmes.

The methodology for this report included a literature review of available documentation and research, key informant interviews, and focus-group discussions with UNICEF country and regional offices and partners.

Data collection

By early 2021, 28 countries had reinstated vaccine campaigns despite the ongoing COVID-19 pandemic and the accompanying challenges. To gather information on these campaigns and facilitate experience sharing for the learning initiative, key contacts within these countries were asked to complete an online survey on the reinstated vaccine campaigns. The survey consisted of four sections:

1. COVID-19 context within country
2. Implementation of the reinstated vaccination campaign
3. IPC measures
4. Routine immunization and integration

Recipients of the survey were asked to provide as much detail and specificity as possible. As many of the countries had reinstated several vaccine campaigns, recipients were asked to complete the survey for what they considered to be the country’s most successful campaign, following global guidance on reinstating immunization services during the COVID-19 pandemic. Recipients were given two weeks to complete the survey and 12 responses were received: Angola, Bangladesh, Equatorial Guinea, India, Kazakhstan, Malawi, Papua New Guinea, Philippines, Somalia, Uganda, Uzbekistan and Yemen.

The 12 responses were reviewed and considered for development into a detailed case study, exploring the lessons learned and successes of the countries’ campaign experience. Six countries were shortlisted for this report, given time constraints of the study team and limitations on the availability of country and regional office staff. A varied range of examples were chosen for the case study, ensuring the report covered the following criteria:

- Examples from diverse geographical regions
- Example of an integrated campaign with multi-antigens
- Example of an outbreak response campaign
- Example of a preventive campaign
- Example of a campaign in a fragile state or vulnerable location (e.g., refugee camp)
- Example of a campaign in a country with confirmed high COVID-19 transmission rates at the time of implementation (> 1000 cases per day)

Literature review

Before conducting online interviews with key informants, the selected countries were asked to share documents such as microplans, guidelines, procurement orders, communication materials and campaign reports, and any information they believed was useful in demonstrating the work undertaken by the vaccination campaign team. The document review was carried out before interviews to establish relevant and fundamental information on the campaign and help to guide questioning.

Informant interviews

Key stakeholders for each country from UNICEF and WHO participated in individual and group interviews. The discussions were semi-structured, ensuring specific themes were covered in all interviews while allowing for new comments, thoughts and reflections to be explored. The interviews covered the following areas:

1. Background and context
2. Potential impact of VPD transmission in country
3. COVID-19 context in country
4. Campaign planning and assessing risk
5. Human resources and training
6. IPC measures
7. Supply and cold chain
8. Logistics
9. Water, Sanitation and Hygiene (WASH) management
10. Funding and financial management
11. Community engagement and social mobilization
12. Routine immunization
13. Programme integration
14. Partnerships
15. Monitoring and Evaluation

Write-up and review

The case studies were drafted and shared with the relevant country offices for fact checking and review, including consulted stakeholders and partners. The UNICEF Headquarters team consolidated these reviews and feedback was addressed and incorporated into the report.



Table 1: Summary of case studies

No.	Country	Immunisation Campaign	Administrative Coverage	Date	Response Type
1	Angola	IPV bOPV MR	71.0% 68.0% 78.0%	September- December 2020	Outbreak
2	Bangladesh	MR	98.1%	December 2020 – January 2021	Preventive
3	India	Routine bOPV	- 98.0%	May 2020; September 2020	Preventive
4	Papua New Guinea	bOPV	87.4% 90.3%	October 2020; February 2021	Preventive
5	Philippines	bOPV MR	87.4% 90.3%	October 2020; February 2021	Preventive
6	Yemen	Diphtheria bOPV	75.0% 93.0%	July 2020; December 2020	Outbreak

Limitations

The case studies describe predominantly positive campaign experiences, documenting valuable lessons and good practices that can inform future immunization programmes carried out during COVID-19 or similar circumstances. However, it is important to note several limitations.

The IPC measures implemented by each country to protect against COVID-19 transmission were usually described qualitatively, through anecdotes and guideline documents. In most countries, the implementation of these measures was monitored for quality, but owing to a lack of resources, campaigns were unable to specifically track whether COVID-19 transmission had occurred at vaccination sites or because of the campaign being implemented.

In some instances, the study team could not validate findings from interviews with other data sources. For instance, campaign guidelines or standard operating procedures (SOPs) were shared but a post-campaign evaluation or report was not available. Literature reviews can also be prone to publication bias, as successful studies or experiences are more likely to be documented than unsuccessful experiences.

Finally, the study was conducted during the initial months of the COVAX roll-out; the initiative aimed at providing equitable access to COVID-19 vaccines globally. Several respondent countries were in the process of receiving and distributing their first supplies as the literature review and interviews were being conducted, resulting in certain informants having limited time or being unable to participate.

SUMMARY OF KEY FINDINGS

High-level good practices

1. Utilize WHO's framework for decision-making and operational guidelines

Understand the principles to consider when organizing a mass vaccination campaign within the COVID-19 context and how to implement effective IPC measures that are adapted to the country context.

2. Implement comprehensive, consistent and creative social mobilization activities

In light of the pandemic, engaging and mobilizing the community is a key priority to build back confidence in immunization programmes and fight the spread of misinformation. Community engagement activities should begin several weeks in advance of the campaign, with positive and informative messaging on the reasons for the campaign, the practicalities and the measures taken to protect communities against COVID-19. Mobilization activities should be aimed at all members of society through a variety of mainstream and social media to galvanize support throughout the country. It is critical to engage local community members in this effort as they know and understand their communities and are best placed to alleviate the concerns of caregivers.

3. Build a clear coordination mechanism between national and local government, UNICEF, WHO and the country's COVID-19 task force

Developing a clear communication channel and organizing daily briefings between operational and implementing partners can be invaluable in addressing issues in the run-up to and during the campaign. Incorporating the country's COVID-19 advisory group or task force will help the campaign adhere to country-specific guidance in relation to the pandemic.

4. Identify hard-to-reach children and take extra steps to reach these communities

The impact of the COVID-19 pandemic has both highlighted and worsened the inequities experienced by the world's most vulnerable children. It is critical for campaign planners to identify hard-to-reach and marginalized children and ensure they receive vaccinations and essential health services.

5. Protect health workers, volunteers and communities from COVID-19 transmission

Health workers should be trained, supervised, compensated, protected and empowered to adhere to IPC measures for their safety and that of their communities.

6. Apply robust M&E activities, using technological innovations where possible

An effective monitoring system enables campaign staff to review coverage and assess whether mop-up campaigns are needed, thereby helping to reach as many children as possible. Evaluating the successes and challenges of the campaign helps to inform future programming.

7. Use the campaign as an opportunity to strengthen routine immunization services

Capitalize on the benefits of the campaign, such as additional resources, funding and public attention, to strengthen routine immunization and essential health services, including building capacity, developing the supply chain system and familiarizing communities with new IPC protocols ahead of the COVID-19 vaccine roll-out.

High-level lessons learned

1. Standardize planning and training well in advance of the campaign

With multiple new measures in place to adapt the campaign to a COVID-19 context, additional time is required for engaging the government, implementing partners, developing strategy, negotiating access throughout the country, communicating the campaign message, and training staff on IPC protocols.

2. Grow the health and volunteer workforce

The impact and repercussions on health workers and volunteers of responding to COVID-19, while simultaneously performing their day jobs, cannot be underestimated. All case-study countries in this report experienced staff shortages or challenges due to this strain. Future campaigns will benefit from additional health care staff, volunteers and supervisors to help ease the burden.

3. Campaigns should be integrated with high-impact interventions when possible

Delivering several antigens alongside cost-effective interventions such as nutrition screening and counselling, birth registration and deworming helps to maximize resources and further protect vulnerable children.

4. Embrace the use of e-tools to support microplanning and campaign monitoring

By transferring paper-based campaigns to a digital system, vaccination teams can be unburdened from time-consuming processes and can utilize “real-time” (same-day) data to better inform campaign planning.

5. Engage a range of non-health actors ahead of the campaign

Incorporate non-health actors, such as local education, child protection or water and sanitation non-governmental organizations (NGOs), into the planning and implementation of the campaign to help achieve even further reach.

6. Encourage government ownership and leadership to support successful implementation

Supporting agencies, such as UNICEF and WHO, should assist the government to make informed and pragmatic decisions, to moderate risk and to respond quickly to unforeseen challenges.

7. Respond rapidly and consistently to COVID-19 rumours

The spread of misinformation and harmful rumours has the potential to damage community trust towards a country’s routine vaccination services and campaigns, and its response to COVID-19. Campaign planners should consider how best to differentiate between the resumed vaccination campaign and COVID-19 vaccination, to avoid confusing messaging.



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COUNTRY CASE STUDIES

ANGOLA

BANGLADESH

INDIA

PAPUA NEW GUINEA

PHILIPPINES

YEMEN

AN

GO

LA





ANGOLA

18 Provinces

164 Municipalities

532 Communes

INTRODUCTION

Angola has made substantial economic and political progress since the end of the civil war in 2002, maintaining political stability and growing the economy through its oil supply. This had a positive impact on the country's development and the population's health.

The under-5 mortality rate declined from 191 (per 1000 live births) in 2002 to 75 (per 1000 live births) in 2019, and maternal mortality decreased from 690 in 2002 to 241 in 2017 (per 100,000 live births).¹⁸ However, despite advancement in certain areas, the country continues to face challenges, including reducing its dependency on oil and diversifying the economy; rebuilding infrastructure; protecting against climate shocks; and improving governance, human development indicators, and the living conditions of the population. The poverty rate is reported to be at 41 per cent, with large pockets of the population living without access to basic services.¹⁹

Angola has been affected by multiple health emergencies, including measles, yellow fever, cholera, malaria and polio, with confirmed outbreaks of cVDPV2. The routine immunization coverage is dramatically low in Angola. UNICEF and WHO 2019 estimates report that coverage has remained approximately the same over the past five years, with few signs of improvement. DTP3 coverage (diphtheria, tetanus and pertussis vaccine) is at 57 per cent, Polio (Pol3; OPV or IPV) is at 51 per cent and measles-containing vaccine (MCV2) is at 45 per cent.²⁰ These figures are well below the necessary rates to protect the children of Angola from VPDs.

¹⁸ UNICEF Angola Demographics, Health & Infant Mortality [Internet]. 2020 [cited 2021 Apr 27]. Available from: <https://data.unicef.org/country/ago/>

¹⁹ World Bank. The World Bank in Angola [Internet]. 2020 [cited 2021 Apr 27]. Available from: <https://www.worldbank.org/en/country/angola/overview>

²⁰ WHO. Vaccine-preventable diseases monitoring system: 2020 global summary [Internet]. [cited 2021 Apr 27]. Available from: https://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D=AGO

In April 2019, after approximately eight years of no polio cases reported, an outbreak of cVDPV2 was reported in the municipality of Cambulo, on the border of the Democratic Republic of Congo. This outbreak rapidly spread throughout the country, affecting 59 (out of a total of 164) municipalities. As of May 2021, the total number of cases from this outbreak was 124 cVDPV and 18 VDPV, with the most recent case detected in February 2020.²¹ Throughout the course of 2019, the government vaccinated 4.5 million children in several subnational campaigns. The outbreak response was due to be completed by the end of March 2020 to ensure nationwide coverage with monovalent oral poliovirus vaccine (mOPV2). However, the final stages of the response were postponed owing to the outbreak of COVID-19 in country. The first 2 cases of COVID-19 were identified on 21 March, with 34,366 cases and 764 deaths reported as of 30 May 2021.²² The Government declared a state of emergency on 27 March, resulting in a two-week lockdown and other restrictive measures including a quarantine period for cases and contacts; physical distancing; closing of borders with limited exceptions; closing of schools, restaurants and public events; and limiting transportation. Until the emergence of COVID-19, there had been considerable progress made to curb the polio outbreak through vaccination campaigns. However, the pandemic slowed the response and limited humanitarian access, worsening the livelihood capacity of the country's poor and vulnerable.²³

An mOPV2 campaign was eventually completed in July 2020. However, given poor routine immunization services, it was deemed necessary to further boost the population's immunity to polio. A three-phased, nationwide integrated IPV-bOPV-vitamin A (vitA) campaign was planned, in addition to delivering the MR vaccine in 17 districts with confirmed measles outbreaks.

The key sources of information for this case study were campaign strategy documents and interviews with national-level UNICEF and WHO staff involved in campaign coordination, planning, implementation and monitoring.

PROGRAMME DESIGN

The campaign was led by the MOH with the direct support of UNICEF, WHO and other partners. The National Coordination Committee, consisting of all major stakeholders, met daily to coordinate campaign planning and implementation with support from the following subcommittees: the Technical Subcommittee, the Logistics and Transportation Subcommittee, and the Communication and Social Mobilization Subcommittee. The same structure was in place at the provincial level, coordinated by the Provincial Governor and Provincial Health Director, to monitor the campaign's daily progress and address any issues that were affecting vaccine delivery.

UNICEF, WHO, the Global Polio Eradication Initiative (GPEI), Angola Red Cross, U.S. Centers for Disease Control and Prevention, and Gavi, the Vaccine Alliance, provided the Government with financial and technical support for all stages of the campaign. At the national and subnational levels, UNICEF helped to strengthen humanitarian coordination through active partnership cooperation agreements with NGOs to support implementation and monitoring. UNICEF also signed annual workplans with relevant government line ministries and provincial governments to help facilitate interventions.²⁴ Civil society and religious organizations were engaged to encourage participation and promotion of the campaign to the targeted population.

The campaign was fully funded, predominantly by the United States Agency for International Development (USAID), and Gavi donations covering the vaccine supply and equipment. Operational costs were covered by UNICEF and a grant from the Japanese Government.

²¹ WHO. Statement of the Twenty-Seventh Polio IHR Emergency Committee [Internet]. [cited 2021 Apr 27]. Available from: <https://www.who.int/news/item/19-02-2021-statement-of-the-twenty-seventh-polio-ihf-emergency-committee>

²² WHO. Angola: WHO Coronavirus Disease (COVID-19) Dashboard with Vaccination Data [Internet]. [cited 2021 June 20]. Available from: <https://covid19.who.int/region/afro/country/ao>

²³ UNICEF. Angola Humanitarian Situation Report [Internet]. 2020 Dec [cited 2021 Apr 27]. Available from: <https://reliefweb.int/report/angola/unicef-angola-humanitarian-situation-report-no4-period-1-january-31-december-2020>

²⁴ UNICEF. Humanitarian Action for Children 2021 [Internet]. 2021 [cited 2021 Apr 27]. Available from: <https://www.unicef.org/appeals/angola/situation-reports>

IMPLEMENTATION

Campaign structure

Angola is divided into 18 provinces, 164 municipalities and 532 communes. The communes are subdivided into urban neighbourhoods and into villages in rural areas. The integrated campaign took place in three phases, from September to December 2020.

numbers, final-year medical and nursing students were also asked to participate.

Before Phase 1, engaging health care workers to participate in the campaign was a challenge owing to concerns regarding COVID-19 transmission. However, as Phase 1 progressed, workers were reassured of the availability of PPE and comprehensive IPC measures in place at

Table 2: Campaign dates and targeted provinces, Angola

Dates	Province	Target populations			
		IPV 2–59 months	bOPV 0–59 months	MR 9–59 months	Vitamin A 6–59 months
Phase 1 4–12 September 2020	Benguela*, Bié*, Cuando Cubango, Cunene, Huambo*, Huila, Namibe and Zaire	1,918,475	1,991,198	250,631	1,772,968
Phase 2 16–24 October 2020	Bengo, Cabinda*, Lunda Norte, Lunda Sul*, Malanje, Moxico and Uige	731,346	1,092,991	113,534	971,446
Phase 3 4–16 December 2020	Cuanza Norte, Cuanza Sul and Luanda*	1,373,289	2,061,172	603,335	1,837,969
Total		4,023,110	5,145,361	967,500	4,582,383

*The MR vaccine was offered in Huambo, Cabinda, Benguela, Bié, Lunda Sul and Luanda Provinces.

The campaign aimed to achieve 95 per cent administrative coverage in each of the provinces, reach 95 per cent of parents and caregivers of children under 5 with information on the importance of routine vaccination, and validate 100 per cent of suspected cases of acute flaccid paralysis.

Angola's surveillance system for VPDs suffered during 2020 owing to restrictions on movement and the Government's state of emergency declaration. However, with funding from Gavi, World Bank and the GPEI, surveillance technicians were hired to reactivate the active search for cases of acute flaccid paralysis. The epidemiological surveillance indicators have slightly improved, but because this external support is a temporary measure, it is necessary for the country to reinforce its national surveillance system to identify high-risk areas for VPDs.

Human resources and training

The Government recruited staff from hospitals, health posts, maternity units and private clinics to make up vaccination teams, and more senior-level staff to act as supervisors or area coordinators. To help bolster staffing

vaccination sites and were eager to work, given the necessity of the campaign.

The MOH and implementing partners provided technical support to the 18 provinces. As national consultants were able to travel between regions, two advisers were allocated to each province to manage the training of supervisors and to support the planning, implementation, remote training and monitoring of the campaign. The trained supervisors were then allocated to municipalities to support the campaign at field level. Because of the domestic travel restrictions in place, international consultants based in the capital, Luanda, were unable to travel to the field, and supported the campaign remotely.

Where possible, training was conducted remotely to avoid gatherings. This was entirely dependent on available technology and sufficient Internet access, so mostly occurred in Luanda and select cities for national-based staff. All other training was conducted in person with IPC measures in place, with all participants required to wear masks and physically distance themselves. Training consisted of a one-day workshop, with medical staff and social mobilizers attending separate workshops tailored to their roles.

Infection prevention and control

In previous vaccination campaigns, a house-to-house strategy was implemented to enable greater access and a higher turnout. Owing to the outbreak of COVID-19, the strategy was adapted to fixed and mobile sites, to ensure staff could enforce IPC measures. Following WHO's framework recommendations,²⁵ the number of mobile sites was increased to reduce crowding and were carried out in outdoor spaces to support physical distancing. Mobile or temporary outdoor vaccination sites require only basic materials, so it was possible to establish additional sites without too many resources. The temperature of all staff, volunteers and caregivers was checked before they entered a vaccination area. PPE, including masks, gloves and hand sanitizer, was procured locally with the support of UNICEF's supply section.

If a health care worker experienced any COVID-19 symptoms, they were required to quarantine for 14 days. On some occasions, this led to the temporary closure of health posts; however, vaccination activities were carried out when they were able to reopen.

Supervisors at the national and provincial level monitored the quality of the implementation of the campaign in their assigned area, checking for the correct use of equipment, recording on tally sheets, monitoring turnout levels and assisting with any adverse events following immunization (AEFI) cases. Supervisors were trained in IPC measures and the correct use of PPE and enforced these at vaccination sites.

IPC protocols were enforced among drivers and logistics staff to comply with national regulations and enhance the safety of the campaign. They were required to take a rapid lateral-flow COVID-19 test before travelling to the regions to distribute vaccine supply and equipment. During the campaign, the supply chain was briefly affected by a senior logistician at the national warehouse contracting COVID-19; however, fortunately, a national consultant was able to carry out this role while they recovered and quarantined.

Social mobilization and community engagement

The IPV-bOPV-MR-VitA campaign was implemented under extremely challenging circumstances. Following the suspension of the mOPV2 campaign, routine immunization at health facilities experienced a decline in uptake while

some smaller health posts were forced to close. The Government and campaign planners then faced significant challenges with community engagement in the campaign.

Misinformation and rumours have consistently burdened the response to COVID-19 in Angola. In July, the WHO office in Angola, the MOH and partners set up the COVID-19 Alliance, a system to dispel potentially harmful misinformation shared mostly online. The Alliance tracks and analyses conversations on the pandemic on social and mainstream media and rebuts misleading information. Regular updates and a fact-checker on COVID-19 are published on the Alliance's website and shared on social media and through its own WhatsApp platform. Rumours tracked by the platform normally refer to the virus, testing, treatment, the vaccine and the response by authorities. Rumours have included the following: "COVID-19 does not kill anyone in Angola, as malaria has made us immune," "drinking alcohol or eating garlic will stop COVID transmission," "COVID-19 does not exist in this country," and one message advertising the opportunity to win a "COVID-19 sweepstake."²⁶ Most directly harmful to the implementation of the IPV-bOPV-MR-VitA campaign and routine immunization was that the polio vaccine was a trial experiment for the COVID-19 vaccine. The Alliance receives approximately 100 calls a day from people seeking clarification on rumours they have heard or seen on media platforms. This level of misinformation can lead to confusion and mistrust in the country's response to both COVID-19 and the IPV-bOPV-MR-VitA campaign.

To alleviate the damage caused by these rumours, the campaign focused on engaging religious and community leaders, as many of the negative rumours were often linked to religious beliefs. These individuals were asked to refute these rumours and promote the campaign and its benefits through Short Message Service (SMS) messaging and social media. They were asked to include positive messaging during prayer groups or at community meetings.

Owing to COVID-19 concerns and restrictions, standard social mobilization activities were amended to avoid encouraging large crowds. Social mobilizers increased their use of megaphones to broadcast key messages, guidance and practical information on how to get vaccinated while driving by villages, markets, churches, schools and water points. This took place two days before the campaign was due to start and during the campaign itself. Social mobilizers were often traditional midwives, health professionals or community development and sanitary agents, who knew and understood their communities well and how best to alleviate the concerns of caregivers.

²⁵ WHO. Framework for decision-making: implementation of mass vaccination campaigns in the context of COVID-19 [Internet]. 2020 May [cited 2021 Apr 21]. Available from: <https://apps.who.int/iris/handle/10665/332159>

²⁶ WHO Regional Office for Africa. Battling COVID-19 rumours and hoaxes in Angola [Internet]. [cited 2021 Apr 27]. Available from: <https://www.afro.who.int/news/battling-covid-19-rumours-and-hoaxes-angola>

Monitoring and evaluation

Administrative coverage was collected by each vaccination team using daily tally sheets. At the end of each session, the data were uploaded to Open Data Kit (ODK) software, an open-source software for collecting, managing and using data in resource-limited settings. This enabled campaign staff at the municipal level to monitor coverage, with the data consolidated after the 10-day period of each phase.

Observing WHO guidelines,²⁷ a coverage survey was carried out after the campaign to assess the coverage reached during the campaign, the coverage reached in children previously not vaccinated against measles and polio, the reasons for non-vaccination, and what communications channels had informed people about the campaign.

OUTCOMES

Estimated coverage rates for the campaign differ greatly between administrative coverage results and the post-campaign survey.

The post-campaign survey identified large percentage coverage discrepancies between provinces. For example, bOPV coverage in Luanda Norte was recorded as 67 per cent for the campaign, but in Luanda Sul, coverage was recorded as 5 per cent. It is unclear whether the reason for such a discrepancy is a result of genuinely low turnout in

Luanda Sul or if there are some limitations with the post-campaign survey. The reasons for missed children were identified as distance to vaccination posts (36.8 per cent); unavailability of measles vaccines (17.6 per cent); parents' refusal (15.9 per cent); no information received about the campaign (14.7 per cent); not authorized to consent to the child being vaccinated (5.8 per cent); waiting time (2.0 per cent); already received the vaccine (1.8 per cent); received the vaccine during routine immunization (1.8 per cent); other (3.6 per cent). The survey also collected data on the main sources of information for the campaign. These were primarily community leaders, social mobilizers, community radio, television and health professionals.

Despite these challenges, the achievements of the campaign and efforts made to resume and improve routine vaccination services should be recognized. Over the course of 2020, UNICEF provided 3.5 million vaccines against measles, polio, DTP, tuberculosis, yellow fever and tetanus to health authorities for routine immunization. Cold-chain equipment and vaccination materials were also dispatched to all 18 provinces. In July and August, with the support of UNICEF, WHO and GPEI, the MOH carried out three consecutive National Immunization Days against polio. In total, more than 3 million children were vaccinated during each campaign. To further boost immunity, the IPV-bOPV-MR-VitA campaign running from September to December integrated several antigens, negotiated access to all provinces, and vaccinated more than 4 million children.

Table 3: Administrative and post-campaign survey coverage results, Angola

Antigen	Administrative data		Post-campaign survey	
	Children vaccinated	Coverage %	Coverage % (vaccination cards)	Coverage % (vaccination history)
IPV (2–59 months)	2,590,389	71%	24%	58%
bOPV (0–59 months)	3,108,449	68%	23%	49%
MR (9–59 months)	547,429	78%	11%	55%
Vitamin A (6–59 months)	2,953,149	66%	20%	47%

²⁷ WHO. Planning and Implementing High-Quality Supplementary Immunization Activities for Injectable Vaccines Field Guide [Internet]. 2016 [cited 2021 Apr 21]. Available from: <https://www.who.int/immunization/diseases/measles/SIA-Field-Guide.pdf>

GOOD PRACTICES

1. Careful application of IPC measures

The MOH and implementing partners instilled a “do no harm” approach into the campaign, adapting the delivery strategy so IPC measures could be in place at vaccination sites to protect against the risk of COVID-19 transmission.

2. A fully integrated campaign

Delivering several antigens and administering vitamin A supplements in an integrated campaign maximized resources, health care workers’ time, technical expertise from partners, and vaccine supply and equipment. For future campaigns, this integration could be taken further to include other high-impact interventions, such as nutrition screening and counselling, birth registration and deworming.

3. Lessons learned for COVID-19 vaccine roll-out and future campaigns

The post-campaign survey collected data on the reasons for missed children and the main sources of information for communities about the campaign. These data can be used to better inform planning for future campaigns, including the COVID-19 vaccine roll-out and routine immunization services.

LESSONS LEARNED

1. Standardize and strengthen advanced planning and capacity-building

Communities in Angola are familiar with a house-to-house delivery strategy, but owing to COVID-19, the campaign modified this approach. The campaign could have benefited from more time being dedicated to microplanning and communal mapping, taking into account population density and distances between sites.

2. Increase social mobilization activities to counterbalance harmful rumours

Utilizing local volunteers and health care workers as social mobilizers meant that they understood the context and fears of the community; however, the campaign could have benefited from a longer and wider-reaching community engagement strategy better utilizing traditional media and social media. This would have given social mobilizers more of an opportunity to counsel and educate parents and caregivers about the necessity of the campaign.

3. Collaborate with non-health stakeholders

Health care facilities could enhance their reach by working more closely with local non-health actors. Involving local partners in logistics planning could assist with transportation challenges and enable greater access to communities, while utilizing the networks of partners could help broaden the campaign’s reach.

CONCLUSION

The post-campaign survey reported low coverage levels for each of the three vaccine phases, but given the demanding conditions of the campaign, the perseverance of government and partner staff, health care workers and volunteers in implementing the campaign should be recognized. Challenges experienced in this campaign can be used to inform more robust planning, implementation and monitoring for future programmes.

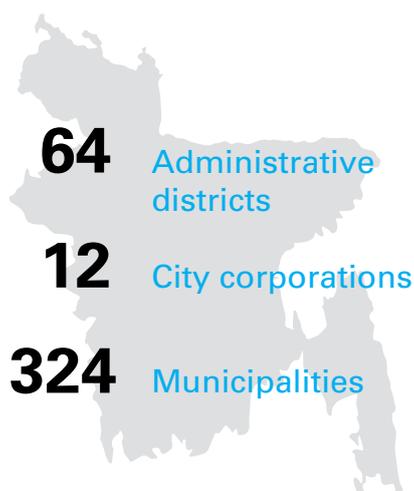
The post-campaign report identified a key recommendation as reinvigorating the country’s Reach Every District approach,²⁸ strengthening service delivery and accountability mechanisms for the identification, prioritization, planning and outreach to disadvantaged children and women to improve immunization coverage.

²⁸ WHO Regional Office for Africa. Reaching Every District (RED): A guide to increasing coverage and equity in all communities in the African Region [Internet]. 2017 [cited 2021 Apr 29]. Available from: <https://www.afro.who.int/publications/reaching-every-district-red-guide-increasing-coverage-and-equity-all-communities>





BANGLADESH



INTRODUCTION

Bangladesh has made significant improvements in children’s health in recent decades. Between 1990 and 2019, mortality of children under 5 decreased from 143 to 31 (per 1000 live births).²⁹ The country has also witnessed a reduction in disparities in under-5 mortality between urban and rural areas and across different regions of the country.³⁰ The high-performing EPI programme has made a significant contribution to these positive trends since its establishment in 1979 and developed a robust capacity to deliver immunization services through a network of clinic-based and outreach activities.

In 2014, a goal was set to eliminate MR from Bangladesh, with a revised date of 2023. There has been significant progress made towards this goal. During 2000–2016, estimated coverage of the first dose of measles vaccine (MCV1) increased from 74 per cent to 94 per cent. The routine second dose, MCV2, was introduced nationwide in 2012, and MCV2 coverage increased from 35 per cent in 2013 to 93 per cent in 2016. Approximately 108.9 million children were vaccinated during SIAs in 2005–2006, 2010 and 2014.³¹ However, maintaining high coverage rates remains a challenge, particularly in rural communities. In more recent years, measles cases throughout Bangladesh have been steadily rising; the incidence rate increased from 1.6 per million population in 2015 to 29 per million in 2019.

²⁹ UNICEF Bangladesh Demographics, Health & Infant Mortality [Internet]. [cited 2021 Mar 30]. Available from: <https://data.unicef.org/country/bgd/>

³⁰ The Partnership for Maternal, Newborn and Child Health. Success Factors for Women’s and Children’s Health [Internet]. 2015 [cited 2021 Mar 30]. Available from: <http://www.who.int/pmnch/successfactors/en/>

³¹ Khanal S., Bohara R., Chacko S. et al. Progress Toward Measles Elimination — Bangladesh, 2000–2016. Morbidity and Mortality Weekly Report [Internet]. 2017 Jul 21 [cited 2021 Mar 30];66(28):753–7. Available from: <http://www.cdc.gov/mmwr/volumes/66/wr/mm6628a3.htm>

To combat the risk of a large-scale outbreak, a national MR immunization campaign was planned for March 2020, but with the onset of the COVID-19 pandemic and nationwide lockdown, the campaign was suspended. Bangladesh faced three concurrent crises: more than 860,000 Rohingya refugees³² living in Cox's Bazar District were heavily reliant on international aid; millions of communities were vulnerable to floods and cyclones; and a significant COVID-19 outbreak affected the whole country and caused further strain on an already struggling health system.

As of 31 May 2021, Bangladesh has reported 800,540 confirmed cases and 12,619 deaths due to COVID-19 to WHO.³³ Since the first cases were reported on 8 March 2020, Bangladesh has experienced a nationwide outbreak with cases increasing exponentially in the initial months. In early July, cases began to decline slowly, until mid-November saw another upward trend.³⁴ The Government of Bangladesh responded by imposing various public restrictions: closure of all educational institutes (18 March); local administrations instructed to stop political and religious rallies, social and cultural gatherings (19 March); all state public programmes and celebrations cancelled (21 March); all public and private offices closed and the population advised to stay at home.³⁵ On 12 April, all international travellers arriving in country were advised to quarantine for a two-week period. These measures were initially in place for a 10-day period before the Government later extended the lockdown period to 31 May. Unfortunately, the impact of the lockdown on COVID-19 transmission was limited owing to a lack of regional and local enforcement and community adherence to restrictions.

Despite these significant challenges, the MOHFW, with the support of UNICEF, WHO and Gavi, successfully implemented the delayed campaign from December 2020 to January 2021, reaching 36 million children nationwide.

The key sources of information for this case study were campaign strategy documents and interviews with national-level UNICEF and WHO staff involved in campaign coordination, planning, implementation and monitoring.

PROGRAMME DESIGN

After the suspension of the national MR SIA campaign, there was growing concern regarding the potential spread of both measles and rubella. Between April and June 2020, limited VPD surveillance data were available, as significant resources had been diverted to monitor the transmission of COVID-19. However, with the knowledge that measles cases had increased throughout 2019 (192 suspected outbreaks, 82 confirmed), the MOHFW and implementing partners deemed the risk too great to delay a national campaign any further, with the concern that deaths from measles would far outnumber deaths from COVID-19.

As the age group targeted for vaccination had a low COVID-19 infection rate, the MOHFW permitted the campaign to be implemented, providing that four basic principles of IPC were upheld at all vaccination sites:

- Maintain physical distancing
- Use masks, hand sanitizer and hand washing to limit spread
- Encourage others to observe physical distancing
- Conduct a “do no harm” approach to ensure the vaccination campaign did not lead to increased COVID-19 transmission

A campaign readiness assessment was conducted as per WHO guidelines³⁶ and submitted to WHO.

The MOHFW and UNICEF planned to vaccinate more than 35 million children spread out across a diverse set of urban and rural locations, with more than 400,000 vaccination sites in total. Conducting a campaign of this scale within the context of COVID-19 led to additional challenges, including the need to implement IPC measures and use alternate vaccination sites because of pandemic-related school closures. To help achieve such an ambitious goal, the team digitized the formerly paper-based planning and monitoring process using the District Health Information Software (DHIS2) platform. The MOHFW has used this platform for its health management information system since 2010.³⁷ This high level of local DHIS2 capacity, combined with the expertise of the UNICEF team, made DHIS2 a clear choice for managing this campaign.

³² UNICEF. Rohingya Crisis [Internet]. [cited 2021 May 2] Available from: <https://www.unicef.org/emergencies/rohingya-crisis>

³³ WHO. Bangladesh: WHO Coronavirus Disease (COVID-19) Dashboard with Vaccination Data [Internet]. [cited 2021 Apr 16]. Available from: <https://covid19.who.int/region/searo/country/bd>

³⁴ Ibid.

³⁵ WHO. Bangladesh COVID-19 Situation Report [Internet]. 2020 [cited 2021 June 20]. Available from: https://cdn.who.int/media/docs/default-source/searo/bangladesh/covid-19-who-bangladesh-situation-reports/who-ban-covid-19-sitrep-04.pdf?sfvrsn=69b6d931_8

³⁶ WHO. Planning and Implementing High-Quality Supplementary Immunization Activities for Injectable Vaccines Field Guide [Internet]. 2016 [cited 2021 Apr 21]. Available from: <http://www.who.int>

³⁷ DHIS2. Bangladesh uses DHIS2 to manage immunisation of 35+ million children in their MR mass campaign | DHIS2 [Internet]. [cited 2021 Apr 16]. Available from: <https://dhis2.org/bangladesh-immunization-campaign/>

IMPLEMENTATION

Campaign structure

The campaign took place between 12 December 2020 and 31 January 2021, with a target age group of all children between 9 months and under 10 years old.

Bangladesh is divided into 64 administrative districts, and below this, there is a tiered system of local government, comprising single-tier urban authorities made up of 12 city corporations and 324 municipalities; and a rural local government system comprising 64 zilas (districts), 493 upazila (subdistricts) and 4,600 unions (which consist of three wards each). The Rohingya refugee population located in Cox's Bazar were not included in this immunization campaign, as an MR SIA was conducted in January 2020 across all camps.

Initially, the campaign planned to vaccinate all school-going children at their educational institutions, but given national school closures, this was no longer possible. The campaign was instead implemented with a “community rolling” strategy across all districts, delivered through fixed sites, outreach and newly established EPI sites. To adapt to a COVID-19 context, the campaign was extended from four weeks to six weeks (36 working days) to avoid overcrowding at campaign sites and allow for delays due to staff shortages. In rural areas, 24 days were dedicated to implementing the campaign, while 12 days were retained for routine immunizations to help boost EPI coverage that had suffered during the past year. In urban city corporations, all 36 days were dedicated to implementing the campaign, with routine immunizations available for zero-dose children.

A separate microplan was developed to plan for “special sessions” in which vaccination teams visited specific locations to vaccinate hard-to-reach and high-risk target groups, such as homeless children who sleep at rail stations, bus terminals and river and seaports; street children; children of working parents; children of migratory tribes (e.g., Bede); and children who live in orphanages, hospitals, prisons, brothels, slums, boarding houses and hostels. These teams vaccinated the children at one site before moving on to another, working at unconventional times (i.e., at early morning or evening) if needed. They followed this separate plan to cover all high-risk groups in conjunction with the schedule for campaign sessions at regular sites. Evening sessions were also organized in city corporations for working mothers.

Human resources and training

At the field level, vaccination teams consisted of two skilled vaccinators (a health assistant, family welfare assistant, municipality vaccinator, NGO vaccinator, senior nurse or paramedic) and three trained volunteers to assist with

crowd control and screen the attendees for COVID-19 symptoms (fever, cough, sickness) before they entered the vaccination site. A deployment plan was established for first- and second-line supervisors.



Vaccination teams travelled to hard to reach communities in Khagrachari, in the Chittagong Hill Tracts.

Shortages of health workers are a known challenge for immunization campaigns in Bangladesh, and within the context of COVID-19, this became increasingly difficult to manage, particularly as health care workers were called upon to both respond to the COVID pandemic and support the immunization campaign. In efforts to reduce staffing challenges in rural locations, the campaign was structured on a rolling basis. In practice, this meant all health workers from one union vaccinated the population of the union’s three wards over the six-week period, as opposed to vaccinating just their own ward. This provided a larger pool of workers to carry out the campaign in each ward:

- Ward 1: weeks 0–2 of the campaign
- Ward 2: weeks 2–4 of the campaign
- Ward 3: weeks 4–6 of the campaign

In the weeks leading up to the campaign, health workers in several rural areas were on strike and it became increasingly difficult to mobilize and engage them during training. In efforts to motivate rural workers, vaccination campaigns in urban city corporations began implementation on December 12 (a week before rural areas). This was successful in mobilizing rural communities, as health workers were reassured by the campaign’s comprehensive IPC measures and supply of PPE while also wanting to benefit from incentives and enabling their children to be vaccinated locally, without having to travel to urban sites.

Staffing at a national level was also affected by COVID-19, with international consultants restricted to supporting remotely from their home countries owing to travel restrictions and a quarantine for arrivals. Only one international WHO consultant was able to support in country.

Infection prevention and control measures

Bangladesh adapted WHO's recommendations for organizing vaccination sites during a pandemic to fit the campaign context.³⁸ IPC measures were put in place to mitigate against the risk of COVID-19 transmission for staff and the community at all vaccination sites. The campaign was extended to six weeks to allow for less crowding, and the number of vaccination sites was increased to allow for physical distancing. Given school closures and the need for sites to be well ventilated, many districts relied on basic temporary outdoor sites, consisting of gazebos, plastic chairs and handwashing stations.



Care givers wearing facemasks as they wait at a vaccination site.

At each site, a clear patient flow was established, with a marked area for COVID-19 symptom screening, handwashing, vaccination stations, waiting area (to monitor for AEFI) and a clear exit path. No child or caregiver was allowed into the session with COVID-19 symptoms and was referred to a health facility if they showed signs of fever or cough. Only one guardian was allowed with the child, to minimize gatherings, and anyone older than 11 years was required to wear a face mask and sanitize their hands before entering the site. Within the waiting area, individual circles marked on the floor 3 feet apart helped attendees to adhere to physical distancing. After each child was vaccinated, the vaccinator was required to disinfect their hands and any

surfaces with hand gel (0.5 per cent chlorhexidine gluconate in 70 per cent isopropyl alcohol).

Adherence to IPC measures and correct use of PPE was assessed and enforced by first- and second-line supervisors and independent monitors while they observed the implementation of the campaign. The country's COVID-19 Emergency Response Fund from the World Bank³⁹ was used to support emergency PPE procurement for the campaign.

Community engagement and social mobilization

Bangladesh has a high vaccine acceptance rate, with an estimated 97 per cent of the population considering vaccines to be safe and effective.⁴⁰ However, there remain isolated cases of vaccine refusal, disengagement and misinformation. With the backdrop of COVID-19, it was clear that the campaign's community engagement and social mobilization plan would need to be extensive and comprehensive.



A well-ventilated vaccination site.

As part of the efforts to eliminate measles and rubella, in 2018 the MOHFW, supported by UNICEF, developed the *Social and Behaviour Change Communication (SBCC) Strategy for Improving Routine Immunization and Measles-Rubella Campaign Coverage*.⁴¹ After conducting

³⁸ WHO. Framework for decision-making: implementation of mass vaccination campaigns in the context of COVID-19 [Internet]. 2020 May [cited 2021 Apr 21]. Available from: <https://apps.who.int/iris/handle/10665/332159>

³⁹ World Bank. Development Projects: Bangladesh COVID-19 Emergency Response and Pandemic Preparedness Project [Internet]. [cited 2021 Apr 21]. Available from: <https://projects.worldbank.org/en/projects-operations/project-detail/P173757>

⁴⁰ Ministry of Health and Family Welfare, UNICEF, WHO, Gavi. Guideline for the crisis and emergency risk communication (CERC) and addressing the vaccine hesitancy. 2018.

⁴¹ Ministry of Health and Family Welfare, UNICEF Social and Behaviour Change Communication (SBCC) Strategy for Improving Routine Immunisation and Measles-Rubella Campaign Coverage. 2018.

a situational analysis through desk research, field visits and an assessment of institutional social and behaviour change communication capacity, a communications strategy was developed to ensure targeted, consistent and continuous messaging was used to engage certain societal groups. Identified groups included urban mothers and caregivers living in slums, garment workers, rural tea garden labourers, adolescents, and Chittagong Hill Tracts Communities (those living in territories previously ruled by India). The situational analysis was the first survey to identify families living in high-rise buildings in urban centres as “too high to reach” and in need of targeted messaging. For each of these groups, the strategy identified potential barriers to access and how best to overcome these through specific communication channels, local language translation and tailored interventions.

The strategy was implemented ahead of the MR campaign, but with the onset of the pandemic, many planned activities were adapted. For instance, before the COVID-19 outbreak, the Islamic Foundation (a government agency under the Ministry of Religious Affairs) encouraged its network of more than 500 Imams across the country to support mobilization at the grass-roots level through announcements at daily sermons and religious gatherings. For the December 2020 campaign, the Foundation encouraged its network to reach out to communities via social media channels and mass SMS messaging. Imams also made megaphone announcements after daily prayers, encouraging communities to receive their vaccinations. Similarly, with national staff unable to travel to different provinces owing to domestic restrictions, the campaign relied heavily on field staff and reactivating relationships with local partners to ensure children in the most remote locations were informed about the campaign.

To access garment factory workers, social mobilizers would ordinarily visit factories and present information sessions during coffee and lunch breaks. Employees returned to work in garment factories from May, but social mobilizers were unable to enter the factories. As an alternative, they encouraged workers to join brief information sessions outside the factory and provided infographic leaflets to those who were not able to attend.

During the campaign, there were six severe AEFI cases, in which children died after vaccination. Local government officials and health care workers attended the funerals of the children and support was provided to all families affected. To reassure the public after these events, the MOHFW and leading partners utilized the national *Guidelines for the Crisis and Emergency Risk Communication and Addressing the Vaccine Hesitancy*, developed in February 2020.⁴² One interviewee recalled a respectful, supportive and proactive response. After each

severe AEFI case, a press statement was released, detailing that the cause of the AEFI was being investigated and any necessary steps would be taken following the outcome of the investigation. Community and religious leaders shared comforting video messages, asking caregivers to continue engaging in the campaign. Social mobilizers utilized parents’ groups and channels on social media to reassure communities. An interviewee reported seeing one online discussion in which parents reassured other parents of the vaccine’s safety and necessity, relaying the campaign messaging that they had seen in other forms of media.

Monitoring and evaluation

The use of several e-tools to conduct M&E activities was highly effective throughout the planning and implementation of the campaign. UNICEF’s national staff led the technology initiative, advocating for the use of online microplanning and several apps for collecting campaign data. There were reports of slight hesitancy from key stakeholders in using this software, owing to concerns that the apps would be unreliable in the field. However, after the campaign’s success, all stakeholders are now reportedly supportive of the digitization of the campaign and eager to use similar innovations in routine immunization services and future campaigns. There were six key areas of innovation in the planning and management of this all-digital campaign through DHIS2:

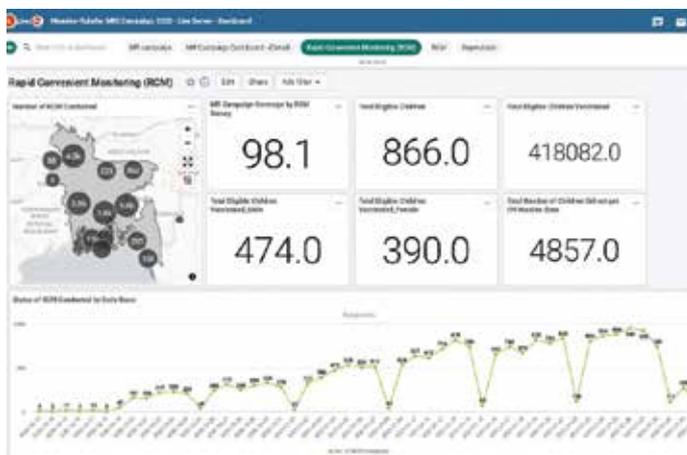


The DHIS2 Supervision App

⁴² Ministry of Health and Family Welfare, UNICEF, WHO, Gavi. Guideline for the crisis and emergency risk communication (CERC) and addressing the vaccine hesitancy. 2018

- Online microplan
- Daily vaccine and logistics requirement and distribution plan
- Daily reporting
- Supervision through Android mobile devices
- Household visits conducted with Android
- Rapid Convenience Monitoring (RCM) with Android

DHIS2 was used to develop the online microplan. Each of the more than 400,000 vaccination sites were entered as organization units in DHIS2, and information on the number of children, assigned vaccinators, volunteers and supervisors was entered for each session. This digital microplan process assisted the teams in identifying hard-to-reach areas and providing a head count of the children eligible for immunization. At the end of each day, health workers uploaded key information from their session's target tally form. Once uploaded, the data were immediately available for review, analysis and planning of follow-up actions. Distribution and supply chain planning were also monitored through DHIS2.



RCM results on the MR campaign's DHIS2 dashboard.

The DHIS2 Android Capture App was used to collect and track three levels of supervisory activities for this campaign. First- and second-line supervisors were required to use the app to capture geolocation data and qualitative feedback (such as adherence to IPC measures, accuracy of vaccination tally, session attendance, AEFI, cold-chain management), to provide real-time data on the campaign. The day after each session, supervisors conducted household visits to track coverage and refusals. If more than one missed or zero-dose child was identified, as per WHO RCM guidelines, the DHIS2 app generated an alert that was visible to the health manager so they could prepare a mop-up vaccination plan. The third use for the

DHIS2 application was for RCM by second-line national, independent supervisors. This provided more detailed monitoring information to higher-level managers, doctors and campaign partners within UNICEF and WHO, helping identify areas with lower than 95 per cent vaccination coverage, for prompt, targeted action. All apps worked online and offline, enabling data to be collected while in remote locations and all data were automatically added to the DHIS2 dashboard, accessible by the Government of Bangladesh, partners, donors and the wider public.

Training on the DHIS2 app had been carried out in March 2020, in person and before the pandemic, to all facility- and community-level users, a total of 20,000. After the delay to the campaign, a refresher training course was carried out in November 2020, virtually. Training focused on reporting and analysis of daily data to help monitor campaign performance and enhance local decision-making.

OUTCOME

According to RCM data, 98.1 per cent of children aged 9 months to under 10 years in Bangladesh were vaccinated with the MR vaccine during this campaign. This is a total of 36.5 million children and goes beyond the campaign's target of 95 per cent coverage. Approximately 20,000 users were equipped and trained in using the DHIS2 Android Capture App, making this campaign the largest Android deployment in DHIS2 history, as well as the first digital immunization campaign in Bangladesh.

The campaign's IPC measures and use of online tools have helped inform the country's implementation of the COVID-19 vaccine programme.



An MR campaign supervisor using the DHIS2 Supervision App to input data.

GOOD PRACTICES

1. Identifying hard-to-reach communities

Recognizing key sectors of communities that are hard to reach and tailoring key messages accordingly helped to generate engagement. The campaign relied heavily on social media, WhatsApp, megaphones, community leaders and faith-based organizations to inform parents and carers of IPC protocols and alert them to the start of vaccination sessions.

2. Harnessing the power of technology and innovation with real-time remote monitoring

The successful implementation and maintenance of e-tools throughout multiple areas of the campaign helped manage this complex campaign during a period of strain for the country's health service. The campaign effectively coordinated real-time, remote intensive campaign monitoring from national and subnational levels through the DHIS2 dashboard. There is now clear support from the MOHFW for integrating online microplanning and the DHIS2 app in routine immunization and health services.



Proudly vaccinated!

3. Adapting to staffing challenges

The staffing structure at the union and ward level was adapted to work on a rolling basis, mitigating against health care worker shortages.

4. Utilizing WHO guidance on effective IPC measures for vaccination sites

Thorough IPC measures were implemented and supervised at all vaccination sites, adhering to WHO guidance while adapting to recognize certain context-specific constraints.

5. Needs-based sessions for extremely hard-to-reach locations

The campaign developed a separate, comprehensive microplan for hard-to-reach areas and high-risk groups, with teams deployed for 18 days to cover these locations.

6. Strengthening routine immunization

The campaign was used as an opportunity to strengthen routine immunization by developing bottom-up microplanning at the lowest administrative levels with the participation of all stakeholders, health workers and supervisors. The campaign also revitalized social mobilization activities to increase the demand for vaccination.

LESSONS LEARNED

1. A missed opportunity for including other interventions

Other interventions, such as counselling on nutritional packages, vitamin A distribution, family planning services or other health programmes, could have been implemented alongside the campaign to make the best use of such a wide-reaching platform.

2. Allow additional time for advocating to partners and stakeholders

UNICEF was required to advocate to the MOHFW and other partners to support the use of online micro planning and the DHIS2 app. This shift in approach required advanced planning, to ensure all stakeholders understood the benefits of digitizing the campaign and could in turn facilitate broad acceptance among health care workers.

3. Produce a comprehensive campaign report

A comprehensive evaluation report owned by the Government that reviews the campaign experience and pinpoints areas for improvement would be an important tool for highlighting good practices and lessons learned in the country's first digital campaign.



Parents are sitting with their children in the waiting room of Surjer Hasi Clinic, Bangladesh

CONCLUSION

The MR campaign in Bangladesh produced many strong practices in delivering a large-scale, complex immunization programme. Most notably, the campaign undertook extensive activities to identify highly vulnerable or zero-dose children, persevering with this campaign strategy

during a period of extreme pressure for the national health service. The campaign also succeeded in developing a fully digitized campaign, paving the way for future SIAs and routine health services to utilize this technology. To strengthen future campaigns, Bangladesh would benefit from integrating supplementary health services with the delivery of vaccines.

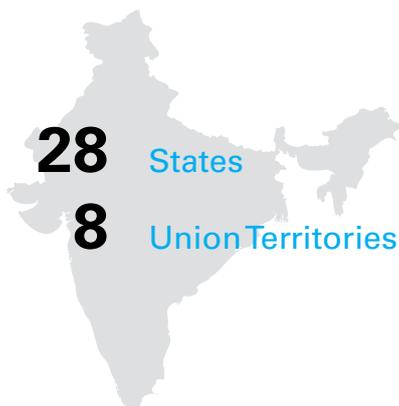


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INTRODUCTION

The impact of COVID-19 has been felt severely throughout India. As of May 2021, the country was experiencing a second wave of infections, with the number of cases among the highest globally. The surge in infections caught India's health system off guard, with delays in testing, shortages in critical care and oxygen supplies, and hospitals forced to turn away critically ill patients. On 30 January 2020, India's first five cases of coronavirus were identified; as of 31 May 2021, there were 28,047,534 cases reported, 329,100 deaths, and daily increases of more than 300,000 cases.⁴³

The pandemic has affected all areas of life in India. The country's gross domestic product shrunk by 23.9 per cent in the initial months of the first wave, having serious socioeconomic ramifications on workers and daily life.⁴⁴ It led to the highest mass economic migration in 70 years and has disrupted the delivery and quality of essential health, nutrition, education and child protection services.

Before the pandemic, India had made significant progress in improving health indicators, particularly those related to child health. Between 2000 and 2019, the under-5 mortality rate decreased from 91.8 to 34.3 (per 1000 live births).⁴⁵ In 2014, the country was declared polio free, and in 2015, maternal and neonatal tetanus was eliminated. To advance full immunization coverage, the Government of India launched the Mission Indradhanush initiative: the largest immunization programme

⁴³ WHO. India: WHO Coronavirus Disease (COVID-19) Dashboard with Vaccination Data [Internet]. 2021 [cited 2021 Jun 20]. Available from: <https://covid19.who.int/region/searo/country/in>

⁴⁴ UNICEF. Humanitarian Action for Children 2021 - India [Internet]. 2020 [cited 2021 Jun 7]. Available from: <https://reliefweb.int/report/india/humanitarian-action-children-2021-india>

⁴⁵ UNICEF. India Demographics, Health & Infant Mortality [Internet]. 2019 [cited 2021 May 12]. Available from: <https://data.unicef.org/country/ind/>

in the world in terms of people vaccinated, geographical coverage and quantities of vaccine used. A 2018 survey conducted in 190 districts where Mission Indradhanush was recently implemented indicated that the proportion of children with full immunization coverage increased by 18.5 per cent from pre-Mission Indradhanush estimates.⁴⁶ The aim is for India to sustain 90 per cent full immunization coverage, reliant on routine services and removing the need for supplementary campaigns.

However, with the onset of COVID-19 in 2020, routine immunization services were suspended during a period of national lockdown. On 15 April, the Ministry of Home Affairs published an order deeming all health services essential

and requiring them to be functional throughout the country, including immunization services.⁴⁷ This allowed steps to be taken to resume routine immunization services and campaigns.

India's national immunization schedule includes the following vaccines: BCG for tuberculosis; hepatitis B; OPV; IPV; pentavalent vaccine (against diphtheria, pertussis, tetanus, hepatitis B and *Haemophilus influenzae* b); pneumococcal conjugate vaccine; rotavirus; MR; DTP; and Japanese encephalitis.⁴⁸ This case study explores how India resumed routine services nationally after a six- to eight-week suspension and implemented a subnational bOPV campaign in September 2020.

PROGRAMME DESIGN

The order administered by the Ministry of Home Affairs on 15 April 2020 allowed essential services to resume on 20 April. India is administratively structured into 28 states and 8 union Territories, all of which were responsible for operationalizing immunization services within their own regions, including all preparatory IPC arrangements.

UNICEF is a long-standing partner with the national Government and works closely with the MOHFW. UNICEF is an active member of the National Technical Advisory Group, the Immunization Action Group, and the Polio Expert Advisory Group to support policy development. In efforts to resume services, UNICEF staff worked closely with the national Government to revise SOPs and resume routine services in a safe manner, incorporating WHO's operational guidance for maintaining essential services.⁴⁹ This was a priority for the Government once services were allowed to resume, but it took time to achieve normal levels of coverage.

Before the pandemic, the Polio Expert Advisory Group had recommended that the MOHFW implement a national immunization campaign and two subnational immunization campaigns in 2020, lasting two to three days only, to continue the country's polio elimination strategy. The national campaign took place in January

2020, before the onset of the pandemic, but the subnational campaign that was initially planned for June was postponed until September 2020. Only one subnational campaign was possible, given the suspension and delays to services.

For the September campaign, UNICEF focused its support primarily in two states, Uttar Pradesh and Bihar, utilizing the Social Mobilization Network (SMNet) strategy. SMNet was created as a strategy to eradicate polio by engaging thousands of front-line social mobilizers to advocate for vaccination in some of the most underserved, marginalized and vulnerable communities in India.⁵⁰ The strategy has been recognized for its role in achieving polio elimination throughout the country. After the certification of India becoming polio free in 2014, UNICEF and the Government developed a transition plan, decreasing SMNet in size and changing the programme from a national strategy to a state and regional strategy. The management of the programme is transitioning from UNICEF to state governments.

To recover missed children during COVID-19, each state was asked to develop and roll out a catch-up plan. In addition, a specific campaign called "Intensified Mission Indradhanush" was carried out in districts of the country with low immunization rates. This consisted of two rounds of intensive catch-up sessions for missed children and pregnant women in the months of February and March 2021.

⁴⁶ Gurnani V., Haldar P., Aggarwal MK., et al. Improving vaccination coverage in India: Lessons from Intensified Mission Indradhanush, across-sectoral systems strengthening strategy. *BMJ* [Internet]. 2018 Dec 7 [cited 2021 Jun 7];363. Available from: <https://doi.org/10.1136/bmj.k4782>

⁴⁷ Ministry of Home Affairs. Order 15 April 2020 [Internet]. Available from: <https://www.mha.gov.in/sites/default/files/MHA%20order%20dt%2015.04.2020%2C%20with%20Revised%20Consolidated%20>

⁴⁸ National Health Mission. National Immunisation Schedule [Internet]. [cited 2021 Jun 7]. Available from: <http://www.nrhmp.gov.in/content/immunisation>

⁴⁹ WHO. Maintaining essential health services: operational guidance for the COVID-19 context interim guidance [Internet]. [cited 2021 Apr 14]. Available from: <https://www.who.int/publications/i/item/WHO-2019-nCoV-essential-health-services-2020>

⁵⁰ Deutsch N., Singh P., Singh V., et al. Legacy of Polio: Use of India's Social Mobilization Network for Strengthening of the Universal Immunization Program in India. *J Infect Dis* [Internet]. 2017 Jul 1 [cited 2021 May 26]. Available from: <https://doi.org/10.1093/infdis/jix068>

IMPLEMENTATION

Campaign structure

Before the COVID-19 pandemic, routine immunization services were delivered through three main modalities:

1. Birth dose vaccination at delivery wards in health facilities
2. Health facility-based sessions at district health centres, primary health centres, subhealth centres
3. Outreach sessions as part of Urban or Village Health Sanitation and Nutrition Days

However, in the context of COVID-19, the delivery of immunization services was adapted.

To manage the COVID-19 response, the Indian Government categorized all districts, subdivisions, municipal corporations, wards and other administrative areas into “zones” based on their numbers of COVID-19 cases: the red zones had active COVID-19 cases and green zones had no active COVID-19 cases. Red zones were classified as containment zones, with the surrounding areas classified as buffer zones. The classifications were monitored and updated on a weekly basis.

After the order administered by the Ministry of Home Affairs that essential services could be resumed, the MOHFW determined which immunization services could be implemented, depending on the zones of each administrative area:

Table 4: Immunization services permitted by zone, India

Services	Containment and buffer zone	Areas beyond buffer zone and green zone
Birth dose	Permitted	Permitted
Health facility-based session	Permitted only to walk-in beneficiaries at the facility	Permitted
Outreach session	Not permitted	Permitted

For those areas classified as containment or buffer zones, no active social mobilization was allowed; however, every opportunity was utilized for vaccinating beneficiaries if they attended health facilities.

The MOHFW produced detailed guidance for the health systems approach to essential services on topics such as facility mapping and planning, delivering essential services while maintaining physical distancing, tele-health or remote support, outreach services, human resource capacity, health worker safety, and medical and diagnostic supplies.

The same guidance requested all administrative areas to follow three key principles:

1. Guidelines from Minister of Home Affairs and MOHFW on implementing services during COVID-19 are the primary reference points and no state should violate this guidance.
2. IPC measures need to be maintained throughout all zones, including practising physical distancing, handwashing and respiratory hygiene.
3. Birth dose vaccinations at the health facilities can continue irrespective of zones.

Human resources and training

Health workers providing essential health services and responding to COVID-19 were also required to deliver routine immunization services once these were permitted to restart, leading to huge strain on staff and volunteers. Interviewees reported that health workers were initially reluctant to work, and communities were hesitant in accessing services, with some reports of health workers being turned away from villages. However, these fears subsided as the workforce became more familiar with IPC measures and had sufficient access to PPE. Once the COVID-19 vaccine drive was launched, India prioritized the vaccination of its health and front-line workers against COVID-19, which helped alleviate fear among health workers so they could continue delivering routine health services and immunization services.

Accredited Social Health Activists (ASHAs) are key members of the health workforce. Alongside social mobilization volunteers, they worked to allay community fears with messaging on the importance of vaccination. Community members from the Panchayat (village councils) and self-help groups were encouraged to support the campaign through mobilization and managing crowd control.



A pregnant mother receiving her vaccine once services resumed.

For the subnational polio campaign in September, training on the adapted operating procedures and IPC measures was conducted by the MOHFW at a national and state level. At a local level, orientation training was facilitated by supervisors and took place in person but was limited to 30 vaccinators, with physical distancing in place. The orientation covered the IPC measures that needed to be carried out by the cold-chain handler, supervisors, vaccinators and social mobilizers. Videos featuring the key training messages were produced in regional languages and dialects and shared on WhatsApp for vaccination teams to reference.

Infection prevention and control

Before the pandemic, an average of 11 million immunization sessions were taking place every year. An estimated 70 per cent of these were outreach sessions conducted at village level, in which ASHAs visited each house to find those eligible to be vaccinated. The ASHA would normally ask each eligible child and caregiver to attend the vaccination site, leading to crowds of people at one site. These sites were normally held within schools or village halls.

However, with the outbreak of COVID-19, these standardized practices were no longer possible and campaign planners, health workers and communities were required to adjust to new protocols. To address these challenges and reinstate immunization services safely, the MOHFW outlined guidelines to assist local authorities and partners in their planning and implementation. The guidance is specific to India's own context but references WHO's operational guidance for maintaining essential health services. The guidance was released on 21 May 2020.

On routine immunization services, the following guidance and comments were included:

- Delivery of immunization services through outreach must be assessed in the local context and should be undertaken only if the safety of health workers and the community is not compromised.
- Outreach services are permitted in areas beyond the buffer zone, but where feasible, any beneficiaries who were due for these services would be asked to attend peripheral facilities (referred to as booths), on specific dates and times, decided at the local level and informed by SMS messages sent by ASHAs.
- ASHAs must create awareness in the community about the change in schedule and staggered approach, mobilizing beneficiaries in small batches of four to five per session to avoid crowding and ensure physical distancing norms.

Interviewees described the practicalities of implementing these guidelines, explaining that Local Health Governance staff were responsible for identifying suitable, well-ventilated vaccination booths and monitoring crowd control. ASHAs utilized mobile technology to inform parents and caregivers in the area that immunization services had



Health volunteers ensuring parents and caregivers sanitize their hands before entering the health centre

restarted with new protocols in place to minimize the risk of COVID-19 transmission. ASHAs sent SMS messages to caregivers of children who were due for vaccination the following day; five children were vaccinated every hour and, if staffing allowed, two sessions at different locations would take place within one village. Parents and caregivers were asked not to bring their children for vaccination if they were experiencing COVID-19 symptoms, and only one caregiver per child was allowed to attend. All those attending the vaccination area were required to wear a mask, physically distance and wash their hands with soap and water or hand sanitizer.

At the end of each session, the site or booth was sanitized, including all non-immunization equipment, such as weighing machines. Gloves and masks were disposed of along with biomedical waste in an incinerator at the site or transported to the main health facility for disposal. The subnational polio campaign in September was extended from 2 days to 10 days to limit crowding and protect health workers and those attending vaccine booths.

In the initial few months of the pandemic, India experienced challenges with accessing PPE owing to the international shortage and India's reliance on importing equipment. However, by July, India had opened several of its own PPE factories and become one of the biggest global exporters of these goods.

Community engagement and social mobilization

For routine immunization services and the subnational polio campaign, ASHAs and social mobilizers were fundamental in guiding communities to understand the need for the resumption of immunization programmes and explaining the changes to how communities would attend vaccination

booths. A significant shift in behaviour was required, as routine services and campaigns had previously relied on community mobilizers visiting house to house, but within this context they increasingly relied on social media, WhatsApp and SMS messaging.

After being vaccinated, children and caregivers are required to wait for 30 minutes to monitor for AEFI. With support from self-help groups, this waiting period was sometimes used for group counselling and educating communities on preventive messages related to COVID-19, in addition to breastfeeding support and nutrition of pregnant women.

SMNet plays a key role in generating demand for vaccinations, both during campaigns and for routine services, and tackling hesitancy by strengthening the communication capacities of front-line health workers. The strategy was first established in Uttar Pradesh in 2001 by UNICEF and initially focused on polio vaccinations only, but the network has grown to include routine immunization and other reproductive, maternal, newborn and child health priorities.

The network consists of local NGOs partnered with the MOHFW. The lead partner in the implementation of SMNet was previously UNICEF, but this is transitioning to the Government. However, for the subnational campaign for polio in September 2020, UNICEF continued to manage the network in two states, Uttar Pradesh and Bihar.

SMNet follows a tiered structure with mobilizers at community, block, district and subregional levels:

- ASHAs are responsible for community engagement. They track the names, ages and vaccination status of all children under 5 in their area; counsel pregnant women on the importance of breastfeeding and colostrum feeding; and help to integrate newborns into the routine immunization system. Many ASHAs previously carried out the role of Community Mobilization Coordinators for the national polio programme, helping to retain knowledge and experience.
- The block mobilization coordinator supervises community mobilizers (ASHAs), including training and the microplanning at the block level.
- District mobilization coordinators are each responsible for 10 block mobilization coordinators. The district mobilization coordinators are supervised by a subregional coordinator, and a subregional training coordinator has oversight of the training for the SMNet staff.⁵¹

With the resumption of routine immunization services and the subnational polio immunization day, the SMNet



An ASHA informs communities that essential health services have resumed, with IPC measures in place

communities of how services could still be accessed and providing reassurance that IPC measures were in place at health facilities and vaccination booths. All ASHAs were required to wear face masks and physically distance themselves while carrying out mobilization activities. During all mobilization and implementation activities, COVID-19-appropriate behaviour was encouraged among health workers and communities alike.

SMNet continues to be a very effective strategy for engaging the public, utilizing routine data to inform approaches to overcoming community concerns. The network focuses primarily on the most poorly served and hard-to-reach communities, yet data collected throughout the programme's existence suggest that immunization coverage in SMNet communities was often higher than overall coverage in that district.⁵² States implementing the subnational polio campaign used videos, posters, radio broadcasts and social media to raise the profile of the programme.

Monitoring and evaluation

The guidelines issued by the MOHFW instruct states to strengthen the "supportive supervisory mechanism" for Village Health Sanitation and Nutrition Days and immunization sessions, meaning providing active support from the vaccine programme manager during the preparation phase and implementation phase of a campaign.⁵³ This includes monitoring practices associated with social distancing and COVID-19 guidelines.

⁵¹ India Polio Learning Exchange. Social Mobilization Network: Polio Documentation India [Internet]. [cited 2021 Jun 4]. Available from: <https://iple.unicef.in/category/index/social-mobilization-network-1>

⁵² Core Group. Successful polio eradication in Uttar Pradesh, India: the pivotal contribution of the Social Mobilization Network [Internet]. [cited 2021 Jun 4]. Available from: <https://coregroup.org/resource-library/successful-polio-eradication-in-uttar-pradesh-india-the-pivotal-contribution-of-the-social-mobilization-network-an-ngo-unicef-collaboration/>

⁵³ Ministry of Health and Family Welfare. Immunization Services during and post COVID-19 Outbreak. 2020.



Completing a supervision checklist

Interviewees provided an insight into how this guidance was put into practice. For the subnational campaign, supervisors were assigned to vaccination teams to support them with adapting to COVID-19-related practices such as physical distancing and crowd control and ensuring hand sanitizer and face masks were available. Supervisors were required to track completion of the campaign in their area.

India has a robust and standardized framework for monitoring campaign coverage. Partners, including UNICEF, WHO and the United Nations Development Programme, support the

MOHFW on immunization monitoring. Data are collected using standard questionnaires through an Android app. After services resumed in May 2020, the questionnaires were revised and updated to include new guidance. An online platform is in place for real-time collation and analysis of data to inform planning and identify areas with low coverage.

Routine immunization coverage is tracked on a monitoring platform that collates data on a real-time basis. These data are used to guide corrective actions and future planning. This was used extensively and successfully during the Mission Indradhanush campaign. Ordinarily, these data are publicly available, but as of May 2021, the MOHFW is transferring this system to a new platform, which means data are not to be released for the past year. As an indication of coverage rates once services had resumed, there was a clear and sudden decrease in coverage from March to May 2020, with a slight uptake in June 2020, the last month data were made available to UNICEF, WHO and other stakeholders (as of May 2021).

OUTCOME

Interviewees shared anecdotally that 13 field offices reported improved immunization coverage rates, and, in some areas, this was back to pre-COVID levels. Interviewees also commented that the delivery of the COVID-19 vaccine programme has helped support routine services and raised awareness of their importance.



A 1-month old baby receives their routine immunizations in District Barmer, Rajasthan.

GOOD PRACTICES

1. Developing and maintaining strong partnerships

UNICEF and WHO staff in country are adept at working together at the national, regional and local levels, to support the Government of India in delivering routine services and mass vaccination campaigns.

2. Issuing detailed guidance

The MOHFW issued detailed guidance for each “zone” (i.e., containment zone, buffer zone, green zone) to advise regions on how to safely deliver services.

3. Utilizing the trusted and recognized SMNet

SMNet played a critical role in generating vaccine demand and tackling hesitancy, giving front-line health workers, volunteers and key figures the tools to engage communities effectively.

4. Enabling a shift in behaviour

A significant change in behaviour was required from both communities and service providers; ASHAs were asked to avoid house visits, and caregivers were contacted via SMS as opposed to in person, to reduce crowding at vaccination booths.

LESSONS LEARNED

1. Availability of routine vaccine data could inform planning

Routine immunization data have not been publicly available since June 2020, causing partner organizations, local NGOs and health workers to rely on observation and anecdotal evidence to inform planning.

2. Invest in the health workforce

Health workers are delivering essential services, immunizations and the response to COVID-19, leading to a huge strain on staff. India's efforts to maintain its polio-free status, eliminate measles and deliver the COVID-19 vaccine would benefit greatly from growing the health workforce.

CONCLUSION

India's resumption of routine immunization services and campaigns was critical in protecting newborns, children and pregnant women. While the suspension of services caused disruption, significant efforts have been made over the past year to reach those who missed immunization doses. As India continues to struggle with the impact of COVID-19, continuing services for all other VPDs is vital for mitigating against further public health crises.

A close-up photograph of a health worker's hands administering a vaccine to a child. The health worker is wearing a white glove and holding a syringe. The child's arm is visible, and the background is blurred. The entire image has a blue color cast.

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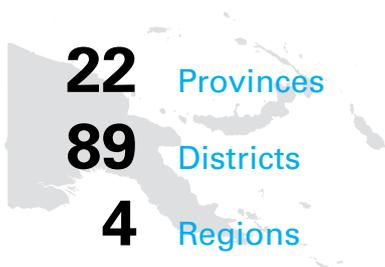
A health worker gives a child a measles mumps rubella (MMR) vaccine



Social mobilizers inform the community about the campaign

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PAPUA NEW GUINEA



INTRODUCTION

Papua New Guinea is divided administratively into four regions (Southern Coastal [Papuan] Region, Northern Coastal Region (Momase), Highlands Region, and New Guinea Islands Region), 22 provinces and 89 districts.⁵⁴ Establishing access to health care in Papua New Guinea is an enormous challenge for the largely rural population, owing to widely scattered remote and inaccessible communities with more than 800 languages, distinct cultures and social structures. The capital, Port Moresby, is not linked by road with the rest of the country (except with two provinces, Gulf and Central) and only 3 per cent of the roads are paved, meaning health services rely heavily on air travel. There are 823 health facilities across the country, but data indicated that fixed-site services reach only 35 per cent of the population.⁵⁵ The population's access to health services is further affected by interprovince migration for those seeking employment and displacement due to civil unrest. The country is highly exposed to natural disasters and the impacts of climate change, including seasonal drought, flooding and landslides. Recurrent food insecurity and lack of access to clean water result in malnutrition, diarrhoeal diseases and malaria.

⁵⁴ Gavi, The Vaccine Alliance. Comprehensive Multi-Year Plan for National Immunisation Programme 2016-2020. 2016. [cited 2021 April] Available from: <https://www.gavi.org/sites/default/files/document/2021/cMYP%20Papua%20New%20Guinea%202016-2020.pdf>

⁵⁵ Ibid.

While Papua New Guinea has seen a positive trend in certain health indicators, such as declining maternal and neonatal mortality rates, the country’s health service remains characterized by a critical shortage of health workers; 5.3 nurses/midwives and fewer than 1 doctor per 10,000 people.⁵⁶ The workforce is demotivated because of poor working conditions and low wages. Many rural hospitals cannot retain medical officers, as health posts are remote, financially unstable and often in dangerous environments, resulting in more than 80 per cent of medical officers working in urban areas.⁵⁷

The Papua New Guinea EPI has been a priority programme for the government since it was established in 1977, but coverage rates are unswervingly low, with DTP1 coverage at approximately 50 per cent in 2019 and OPV3 and IPV coverage at 40 per cent.⁵⁸ In May 2018, Papua New Guinea reported an isolated case of VDPV1 in a child with acute flaccid paralysis. During the following months of the outbreak, 26 confirmed cases of cVDPV1 were identified across nine provinces. A key component of the outbreak response was the execution of large immunization campaigns, with 8 SIAs (four national and four subnational) implemented from July 2018 to July 2019. All immunization campaigns achieved at least 90 per cent administrative coverage. The GPEI now categorizes Papua New Guinea as “no longer infected but vulnerable to reinfection.”⁵⁹ The threat of reinfection remains high due to ongoing outbreaks in the region, and OPV3 coverage of the routine immunization is well below the level necessary to protect children. A new campaign was required to maintain high immunity and vaccinate the new birth cohort.⁶⁰

A national bOPV campaign was initially planned for July 2020, but the National Department of Health (NDOH) decided to postpone it to focus already overextended resources on the COVID-19 response. Papua New Guinea reported its first COVID case on 21 March 2020; as of 31 May 2021, there were 15,910 cases and 162 deaths.⁶¹ Given a weak surveillance system, it is widely accepted that the number of confirmed cases across the country does not reflect the actual burden of disease. Encouraging communities to be tested has been a constant challenge as there is a stigma surrounding COVID-19 diagnosis and only two laboratories in the country can process government-approved polymerase chain reaction (PCR) tests. Community transmission in Papua New Guinea is defined as a cluster of cases in different villages across a province. By November 2020, three provinces – the National Capital District, Western Province and Eastern Highlands Province – were considered as having local community transmission of COVID-19. However, the country had grown familiar with case management and coordinating the public health response to COVID-19, and while there were low hospitalization rates, the bOPV SIA was able to go ahead. The campaign integrated vitamin A and mebendazole administration as recommended by WHO⁶² and is standard for polio campaigns in Papua New Guinea.

The key sources of information for this case study were campaign strategy documents and interviews with national-level UNICEF and WHO staff involved in campaign coordination, planning, implementation and monitoring.



A young girl has her finger marked after receiving polio vaccination

© UNICEF/UN0292505/Kate Holt

⁵⁶ Ibid.

⁵⁷ Ibid.

⁵⁸ WHO; UNICEF. Papua New Guinea: WHO and UNICEF estimates of immunisation coverage [Internet]. 2019 [cited 2021 Apr 14]. Available from: https://www.who.int/immunization/monitoring_surveillance/data/png.pdf

⁵⁹ GPEI. Papua New Guinea Polio Status [Internet]. 2020 [cited 2021 Apr 21]. Available from: <https://polioeradication.org/where-we-work/papua-new-guinea/>

⁶⁰ UNICEF; WHO; Global Polio Eradication Initiative. Polio SIA Guidelines. 2020.

⁶¹ WHO. Papua New Guinea: WHO Coronavirus Disease (COVID-19) Dashboard with Vaccination Data | WHO Coronavirus (COVID-19) Dashboard With Vaccination Data [Internet]. [cited 2021 June 20]. Available from: <https://covid19.who.int/region/wpro/country/pg>

⁶² WHO. WHO Integrated Delivery Platforms [Internet]. 2018 [cited 2021 May 11]. Available from: https://www.who.int/immunization/programmes_systems/interventions/WHO_IVB_integrated_delivery_platforms_2018.pdf?ua=1

PROGRAMME DESIGN

After the deferment of the original campaign, WHO and UNICEF lobbied the NDOH to discuss how the campaign could be implemented within a COVID-19 context, as delaying it further could have severe consequences on the effort to maintain wild poliovirus elimination and prevent cVDPV outbreaks.

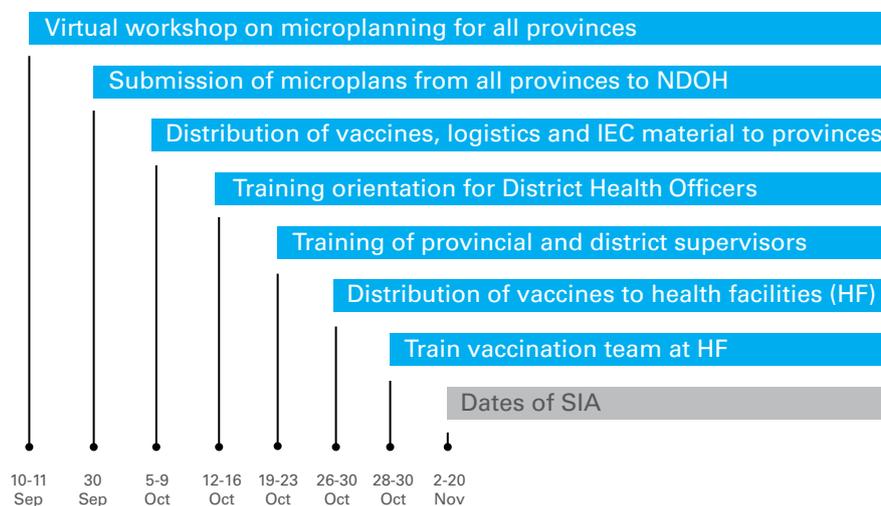
At a meeting with the Inter-Agency Coordination Committee, responsible for advising the government on national immunization planning, the government, NGOs and UN agencies were given the opportunity to present their views on continuing with the campaign in this context. This was considered a valuable and fruitful discussion, engaging partners in all areas of service provision and encouraging open communication. WHO carried out a risk-benefit analysis for conducting the campaign (as recommended in the operational guidance for maintaining essential health services in the COVID-19 context⁶³) assessing the current polio surveillance data in country and considering external factors. Conducting the campaign risked further overwhelming health staff while they continued to provide COVID-19 case management. However, with polio outbreaks occurring in the region, low routine immunization coverage and

weak surveillance, WHO and UNICEF ultimately advised NDOH that the country was highly vulnerable to a polio outbreak and the campaign should be implemented with protocols adapted to the pandemic context.

After this decision, only one province, Milne Bay, remained tentative as it had recently identified its first case of COVID-19 and believed there would be more to follow. However, after discussions with UNICEF and WHO, it was agreed that supplementary support would be provided in all the provinces and the campaign could proceed.

Coordination for the campaign was managed centrally by the National Emergency Operations Centre (NEOC), first activated in 2018 by the NDOH after the polio outbreak. The NEOC is composed of representatives of departments for public health, finance, planning, surveillance, the central public health laboratory and health promotion, and WHO, UNICEF, Department of Foreign Affairs and Trade and other local partners. The NEOC meetings are conducted to review routine immunization and SIA at the national and subnational levels and devise recommendations accordingly. In each of the 22 provinces, Provincial Emergency Operations Centres (PEOCs) meet daily to analyse and present the data received from district- and health-facility levels and in turn report this to the NEOC. Figure 1 summarizes the preparation and planning of key activities.

Figure 1. Timetable of SIA preparations, Papua New Guinea



⁶³ WHO. Maintaining essential health services: operational guidance for the COVID-19 context interim guidance [Internet]. [cited 2021 Apr 14]. Available from: <https://www.who.int/publications/i/item/WHO-2019-nCoV-essential-health-services-2020>

IMPLEMENTATION

Campaign structure

The campaign started on 2 November 2020 and was carried out over a two-week period. In some provinces, the duration was extended owing to a delay in starting and mop-up campaigns taking place in several provinces.

- **Outreach sites** (foot patrols) target communities that are living in hard-to-reach or remote locations (e.g., mountainous, along river routes, small islands), requiring vaccinators to spend multiple days away from their base to provide vaccination services. Given the country’s remote communities, vaccination teams rely on helicopters, small charter planes, boats and hiking.

The NEOC and PEOCs recognized that the campaign needed to be implemented with this familiar and trusted strategy for vaccine delivery to achieve sufficient coverage rates,

Table 5: Target age group and estimated population, Papua New Guinea

Vaccine component	Target age group	Target population nationwide*
Oral polio vaccine (bOPV)	0–59 months	1.3 million
Vitamin A	6–59 months	1.17 million
Mebendazole	12–59 months	1.04 million

The vaccine was administered by health workers to the target age group through different strategies: fixed-site, mobile, outreach and house-to-house, which mirrored how routine health services are implemented in PNG.

but noteworthy changes to SOPs were made to adapt to the COVID-19 context.

- **Fixed sites** are permanent health facilities and community health posts, or urban clinics and hospitals with available cold-chain facilities. These sites also served as depots for storage and distribution of the vaccine to temporary fixed sites or mobile teams. Routine immunization services continued from these sites during the campaign.
- **Mobile sites** are temporary sites established at schools, churches, bus stations, marketplaces, village halls and small settlements that are located beyond 3–5 km from a fixed health facility. The vaccination team returns to its home base on the same day.

Human resources and training

At field level, health facility staff were tasked with significant responsibilities. These included preparing the microplan for the catchment area; liaising with lower-level government officials, volunteers, religious leaders, and teachers to inform them about the SIA; reporting the daily performance of the vaccination team to supervisors each day; conducting mop-up campaigns for missed children; and continuing provision of routine immunization and health services.

Vaccination teams comprises three staff members, one vaccinator, one recorder and one social mobilizer/crowd control volunteer. The vaccinator acts as team leader, ensuring supplies are available, the session is set up correctly and IPC measures are in place. They vaccinate children aged 0–59 months and administer vitamin A and mebendazole tablets to age-appropriate children. They are responsible for monitoring ice packs, vaccine vial monitors and vaccine vials. The recorder is tasked with marking the small finger on the left hand of a vaccinated child and completing the tally sheet for OPV, vitamin A and mebendazole administered. The social mobilizer/crowd control volunteer is accountable for announcing the arrival of the team to the community and local leaders, controlling the crowd at the vaccination site, and visiting each house at the end of the session to identify missed children.

Ahead of the campaign, the NDOH and its collaborating partners were concerned that community health workers would be reticent in supporting the programme. Responding to COVID-19 weighed heavily on the medical community, with staff pressured by the national



The Department of Health launches the immunization campaign.

government to work overtime, often for little or no additional pay. However, one interviewee reflected on reports that staff were relieved and grateful to be resuming non-COVID-related health services that were desperately needed by communities.

To respond to capacity gaps, subnational consultants were deployed to Provincial Health Authorities to support several facilities with planning, coordinating and monitoring coverage for the duration of the campaign. These staff were further reinforced by 11 international WHO consultants and 7 national advisers, deployed to 15 provinces to provide technical guidance and supervision. Fortuitously, the international consultants were not subject to travel restrictions as they had arrived in country by February 2020.

After the enactment of the National Pandemic Act in June, domestic travel was permitted for certain reasons and with specific COVID-19 testing measures in place. This allowed the WHO consultants to travel to assigned provinces during the preparation and implementation of the campaign. For those provinces that were not assigned a consultant, remote support was provided from a national level. A significant success for the campaign is that it was managed with 50 per cent fewer international consultants than previous campaigns, meaning that the country is now leading SIAs with a substantial decrease in external support.

The training programme for health facility staff was modified to the COVID-19 context by incorporating sessions on IPC measures at vaccine sites and the correct use of PPE materials. WHO and UNICEF coordinated two virtual training workshops for all Provincial Health Authorities: one workshop incorporated all provinces within the Southern Coastal (Papuan) Region and Highlands Region, and the second incorporated all provinces within the Northern Coastal Region and New Guinea Islands Region. Interviewees described having low expectations for the efficacy of these workshops, as virtual training does not allow for open discussion in the same manner as in-person training. However, they were pleased to report full attendance and engagement from each province, with staff appearing eager to support the long-awaited campaign. The trainers did not assign pre- and post-tests, but they allocated plenty of time for question-and-answer sessions. After these workshops, Provincial Health Authorities used the same learning materials and content to train health facility staff. These trainings took place in person, in well-ventilated spaces with a maximum of 50 people in attendance and with all attendees wearing masks and practising physical distancing.

Infection prevention and control measures

To implement the polio SIA safely, the following IPC measures were put in place for all health facility staff and vaccination teams to follow:

- Staff should not report to work if they develop any symptoms of fever, cough or shortness of breath. Staff should contact their supervisor immediately if they do develop these symptoms.
- If there is community transmission of COVID-19 in the province, all workers should wear a medical face mask during the vaccination session, replacing the mask every day. In PNG, community transmission was defined as a cluster of cases in different villages across the province.
- Avoid physical contact and maintain a physical distance of 1.5 metres.
- Perform hand hygiene as frequently as possible, with soap and water for 20 seconds, or use hand sanitizer.
- Avoid touching your face and your face mask while working.
- Clean and disinfect vaccination site and work surfaces at the beginning and end of every day.
- Wash clothing when you return home at the end of the day if you have been in the field.
- Place all waste generated during vaccination activities in disposable plastic bags and return it to health facilities for safe disposal at the end of the day.

To protect against COVID-19 transmission, health care workers were trained on observing a “no touch approach”⁶⁴ for administering the vaccine, in which the parent or carer was asked to hold the child’s mouth open gently while administering the oral vaccine, vitamin A and deworming medication. Parents were then asked to hold the child’s little finger on the left hand for the recorder to mark it with a pen, indicating that the child had been vaccinated.

Regular supervision was carried out by subnational consultants to ensure staff were adhering to these measures. Supervisors were required to carry out the following protocols:



Health workers wearing masks and gloves at a temporary outside vaccination site; a community mobilizer encourages attendance using a megaphone.

⁶⁴ UNICEF, WHO, GPEI. Polio Supplementary Immunisation Activity Guidelines. 2020.

- Screen health care workers daily for COVID-19 symptoms (fever and cough)
- Coordinate team members so they ideally worked within the same health facility catchment area they live in, to limit travel; if this was not possible, they needed to be from within the same district
- Remind and enforce physical distancing during all meetings, training, and immunization sessions
- Ensure bleach disinfectant (1000 ppm sodium hypochlorite) was prepared daily by staff and used to clean all vaccine carriers and high-touch surfaces. Water, soap, hand sanitizer and masks needed to be available for all staff
- Ensure all waste was returned to health facilities and burned safely in an incinerator (if available) or buried

PPE supplies were readily available in country by the beginning of the campaign, with each province provided with UNICEF funding to procure PPE locally. For items that could not be procured at a provincial level, the campaign integrated with the country's ongoing COVID-19 response. SIA campaign supplies were added to the regular shipments being distributed to Provincial Health Authorities nationwide, helping to share resources and enhance cost efficiency.

Community engagement and social mobilization

The NEOC, PEOCs and implementing partners, UNICEF and WHO, have robust experience in effecting social mobilization for polio SIAs.

Provincial Health Authorities coordinated social mobilization and advocacy efforts with the support of subnational consultants across all 22 provinces. Ahead of the campaign, health facility managers, health workers, health promotion volunteers, community leaders and NGO partners were trained virtually in how to mobilize the community effectively. This included explaining the benefits of the polio vaccine, the role of front-line workers, use of Information, Education and Communication (IEC) materials and how to respond to cases of vaccine hesitancy, particularly with instances of refusal owing to COVID-19.

Where possible, vaccination teams and volunteers were encouraged to visit the community before the campaign, ideally with megaphones and IEC materials to mobilize parents and caregivers. Posters and banners were displayed in high-traffic public locations such as schools, churches, village halls and marketplaces a week prior to the campaign. Local and religious leaders, ward councillors and influencers were identified and familiarized with the benefits of the polio vaccine and the new IPC measures in place; they were asked to share this message with their communities.

During the polio outbreak response of 2018, UNICEF reported cases of vaccine hesitancy due to negative and harmful rumours circulating in communities. In some instances, local pastors were preaching to their

congregations that the vaccine was spread by the devil and could lead to impotency. To overcome this resistance, before the 2020 campaign, significant communication activities were undertaken to engage and reassure communities that the bOPV campaign was safe and necessary. This was largely successful, with interviewees noting that cases of vaccine hesitancy were rare. UNICEF field staff did report some examples of parents concerned that the vaccine being offered was for COVID-19 or was part of a COVID-19 trial and was not considered safe. However, these were isolated cases and could usually be rectified by a health worker speaking directly to the hesitant family, principally because health workers are such trusted members of the community.

On a national level, UNICEF supported the DOH's wide-reaching media communication plan, which was amplified for this campaign to combat the impact of COVID-19 on engagement activities. UNICEF and WHO developed tailored communication messaging to educate communities on the importance of polio vaccination during the pandemic, integrating this messaging with COVID-19 awareness-building activities. Appropriate spokespersons were identified at national and provincial levels to provide regular updates to the press on campaign progress. The NDOH authorized articles in print media, television and radio advertisements using local celebrities, teachers, church leaders and popular paediatricians. The Council of Churches was enlisted to spread messages of support for the campaign through its network.



Social mobilisers arriving in a small village

In ordinary circumstances, the launch of a vaccination campaign in Papua New Guinea is an exciting and joyous occasion. It is an opportunity to bring communities together and educate caregivers regarding which health services are available to them. With the risk of COVID transmission, this traditional event was not possible, but the NDOH was determined to celebrate the start of the campaign to maintain enthusiasm and support nationwide.

The campaign was launched by PNG's Health and HIV/AIDS Minister with a televised speech broadcast by the National Broadcasting Corporation (NBC) on 31 October. Throughout the duration of the campaign, NBC was a great support, providing WHO and UNICEF staff with a timeslot on the radio every evening, thus affording the opportunity to update on the campaign's progress and to encourage caregivers to attend immunization sessions. This timeslot immediately followed the daily COVID-19 response update, as this frequently had the highest number of listeners across the country. Public service announcements, one in a male voice in English and one in a female voice in Tok Pisin, were also broadcast four times a day for every day of the campaign. NBC is a trusted and revered news source in Papua New Guinea and one interviewee took pride in engaging communities via this media channel. In previous campaigns, announcements would take place only before the campaign, but given the sensitive nature of the context and a need for communities to understand the "new normal" of the COVID-19 situation, there was an impetus to increase media output.

The NDOH used the government's official social media channels on Facebook and Twitter to highlight positive human-interest stories and photographs from the campaign. UNICEF, WHO and local partners also employed their social media accounts to encourage engagement in the campaign and developed content to be shared by community leaders, teachers, doctors, parents and caregivers.

Monitoring and evaluation

The national and provincial EOCs were established during the polio response in 2018 and 2019 and have remained in place throughout the COVID-19 response and the latest national polio campaign. Daily meetings have occurred since the centres' establishment to enhance coordination and monitoring and address any issues.

The NEOC was informed predominately by the PEOC, which provided a bridge between local health authorities and the national centre. The PEOCs reported on staffing gaps, logistical challenges, vaccine refusals, AEFI cases and missed communities, receiving their information from DOH monitors who visited communities on a random basis to monitor campaign quality. Monitors were required to observe adherence to COVID-19 IPC measures, ensuring that COVID-19 screening was taking place for staff and

caretakers visiting the site, physical distancing and hand hygiene was observed, masks were worn and the site was being sterilized regularly with bleach solution.

External monitors from WHO, UNICEF and other partners carried out RCM using ODK software in 16 of 22 provinces throughout the two weeks of the campaign. They were accompanied by a staff member from the programme or PEOC who had knowledge of the local area. The RCM teams were required to have a vaccine carrier with a minimum of two OPV vials and a finger marker. If any children were found unvaccinated, the monitor was required to vaccinate and mark their finger, regardless of the need for mop-up in that area. Two forms of RCM were conducted: house-to-house RCM and transit-point RCM, which referred to markets, churches, bus stations, ports, airports, border points and other areas of congregation. For the house-to-house RCM, monitors randomly selected the first house in the identified area and proceeded to visit every second house until 10 houses had been visited. If there were fewer than 10 houses in the area, the monitor was required to visit them all. Data were collected on the number of vaccine doses administered, the number of missed children, zero-dose children, refusals and referrals. This information was compiled daily and used to identify communities that required mop-up campaigns. If a mop-up campaign was necessary, the monitor was required to inform the district office and local health centre to arrange for it to be conducted the same or next day, or at a minimum by the end of the SIA. It is mandatory for the vaccination team to visit each house and "sweep" for missed children during mop-up activities. Villages were identified by local community knowledge.

For the six provinces where RCM data were not collected, the decision to conduct a mop-up was based on several factors: administrative coverage data (where the number of vaccinated children is below the estimated target population for the area), the supervisors' observations, or areas where significant implementation challenges occurred, such as low vaccine stocks or severe weather.

Four key indicators were included in the RCM tool to assess adherence to IPC measures: crowd control, physical distancing, handwashing or using sanitizer, and wearing a face mask. A total of 331 immunization sessions across 16 provinces were observed and supervised during the early stage of OPV SIA implementation. For example, the IPC measure of adequate crowd control was observed in 93 per cent of the sessions attended.

Table 6: Adherence to IPC measures during immunization session, Papua New Guinea

IPC measures	Observed	Not observed
Crowd control	93%	7%
Physical distancing	74%	26%
Handwashing	77%	23%
Wearing a face mask	59%	41%

OUTCOME

WHO and UNICEF representatives consider the campaign a success; it achieved a 91.3 per cent administrative coverage rate, meaning 1,170,910 children aged 0–59 months were vaccinated. Most provinces attained more than 75 per cent coverage, with Jiwaka and Enga provinces reporting 119 per cent and 116 per cent coverage, respectively. Western Province had the lowest reported coverage rate of 48 per cent of the target population. The RCM data collected from 16 provinces provided an estimated national percentage for children missed: 21 per cent for house-to-house vaccinations and 26 per cent for transit-point vaccinations.

Interviewees discussed reports of reluctance to be vaccinated owing to the threat of COVID-19 transmission and some reports that caregivers believed the campaign was for a COVID-19 vaccine trial. However, the RCM data suggested the predominant reasons for missed children included a lack of information, the child being absent

when vaccination team visited, the child being sick, the household not visited by vaccination team, vaccination not needed as the child had received vaccine during routine immunization services, or other. In some instances, most notably Western Province, vaccination teams suffered access challenges as certain provincial areas can be reached only by helicopter or boat, meaning teams were reliant on suitable weather and additional funding for high-transportation costs.

In March and April, routine immunization services were severely affected by the onset of COVID-19, with coverage rates well below 50 per cent. To help rectify this, several provinces used the campaign to identify zero-dose children and administer routine vaccinations. This occurred in Morobe, Autonomous Region of Bougainville, West Sepik and Jiwaka. In Jiwaka, this programming was funded with Equity Support, supplementary funding provided by UNICEF to assist zero-dose activities in hard-to-reach areas. The same programme is planned for Central Province in the coming months, but given inclement weather, the programme has been delayed several times.

GOOD PRACTICES

1. Attaining national and provincial governmental support

UNICEF and WHO interviewees discussed the importance of listening to and acknowledging the concerns of Provincial Health Authorities and assuring stakeholders that national resources could be deployed regionally. This support from UNICEF and WHO country offices and consultants was critical in moving campaign planning forward.

2. Celebrating the launch of the campaign

Interviewees reported that launching the campaign with a virtual celebration, supported by the national broadcaster, was important for galvanizing awareness and enthusiasm throughout the country

3. Conducting comprehensive and persistent social mobilization activities

The campaign targeted the health network and community life with strong, unswervingly positive messaging, on a scale larger than previously attempted in previous campaigns. This focused specifically on churches and civil society organizations to harness the power of their reach and influence.

4. Integrating the campaign with provision of other public health interventions

Alongside the SIA, vaccination teams distributed vitamin A and mebendazole tablets to age-appropriate children, providing essential health care to those in hard-to-reach locations. Similarly, integrating routine immunizations with the SIA where possible helped to boost coverage rates for other antigens after a suspension to services in March and April 2020.

5. Providing effective and comprehensive capacity-building

WHO and UNICEF provided guidance and conducted training for Provincial Health Authorities and national staff, supporting the country's transition to managing the campaign with fewer international consultants.

6. Protecting health care workers from COVID-19 transmission

Health care workers and volunteers were trained in protocols to protect themselves and those attending vaccination sites from COVID-19, including the provision and effective use of PPE.

7. Making cost-efficiency savings where possible

The campaign utilized regular COVID-19 response shipments to deliver campaign supplies across the country, increasing cost efficiency and encouraging the sharing of resources.

LESSONS LEARNED

1. Motivation of the health workforce needed

Interviewees reported that health workers were generally motivated to support the campaign, but they were owed long-overdue paid leave and a salary increase after a stressful year managing the pandemic response. There is a clear need to incentivize health worker roles to expand the workforce and address the severe staffing gaps across the country.

2. Clear need for additional funding

The campaign was underfunded by 20 per cent, resulting in certain provinces raising funds to make up the shortfall. However, in provinces where air or boat transportation is needed to access remote communities, funding gaps are more pronounced and this is not possible.

3. Could benefit from engaging a wider range of non-health NGOs ahead of the campaign

Incorporating non-health actors, such as local education and child protection NGOs, into the planning and implementation of the campaign could help to achieve even further reach.

4. Improvements needed for safe waste management

The COVID-19 response and the campaign highlighted a general shortage of incinerators at health care facilities owing to an increase in PPE materials that needed to be safely discarded, resulting in waste being buried or burned in open pits. The government is reportedly in the process of procuring incinerators, but these have yet to be distributed to the regions.



A young child gets vaccinated at an outside clinic.

CONCLUSION

The bOPV campaign in Papua New Guinea yielded many beneficial and advantageous practices in delivering an immunization programme under extremely challenging circumstances. Integrating the vaccine campaign with administration of vitamin A and mebendazole to avert malnutrition and childhood blindness is a key success for this context, in which children rarely have access to essential health services. Furthermore, campaign planners at national, provincial and local levels adapted their communication

strategies to educate the public on how to protect each other from COVID-19 transmission while still galvanizing enthusiasm for the campaign.

The campaign produced several critically important lessons. It is judicious to engage non-health partners in campaigns during the planning stages so they can assist with education and advocacy activities. Advanced planning and additional funding are required for hard-to-reach provinces, to ensure children within these provinces receive equitable provision of vaccines. These lessons can be applied to any immunization programme to help strengthen services in the post-pandemic phase.



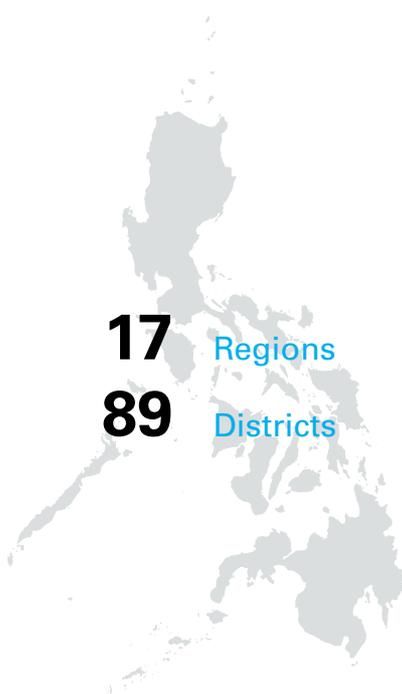
PHILIPPINES



A health worker administers the measles-rubella vaccine in Maguindanao, Bangsamoro Administrative Region in Muslim Mindanao (BARMM).

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PHILIPPINES



INTRODUCTION

The Philippines is divided into major island groups, Luzon, Visayas and Mindanao, which are further split into 17 regions across the three groups. In recent years the country has experienced increasing urbanization, a growing middle class, a large and young population and a declining poverty rate. However, it is frequently burdened by the impact of natural disasters. The year 2020 witnessed a significant number of natural disasters, including the sudden eruption of Taal volcano in Calabarzon region, a 6.6 magnitude earthquake in the Bicol region and three highly destructive typhoons that caused widespread damage in Region 5, Region 2 and Metro Manila.⁶⁵ The COVID-19 pandemic has put additional strain on an already overwhelmed health system that is responding to ongoing measles, dengue and polio outbreaks and a severe rate of malnutrition in children under the age of five.

The country has suffered in recent years from declining vaccination coverage and spikes in measles and polio cases. In 2010 there was 78 per cent coverage for the third dose of polio vaccine (OPV3) and 80 per cent coverage for the first dose of a measles-containing vaccine (MCV1). However, by 2019, coverage was at 66 per cent and 67 per cent for OPV3 and MCV1, respectively⁶⁶. The country experienced a large measles outbreak in 2019, with 23,563 confirmed measles cases and 338 deaths. This

⁶⁵ OCHA. Philippines 2020 Significant Events Snapshot [Internet]. 2021 [cited 2021 Apr 19]. Available from: https://images.ctfassets.net/ejsx83ka8ylz/3kJ5fBUS7OdxVoq6qmxQ5Y/b4df6cb57e593b3f885749c47f081b45/210115_OCHA_PHL_2020_Humanitarian_Highlights_Snapshot.jpg?w=960&h=679&fm=webp

⁶⁶ UNICEF; WHO. Philippines: WHO and UNICEF estimates of immunisation coverage [Internet]. 2019 [cited 2021 Apr 19]. Available from: https://www.who.int/immunization/monitoring_surveillance/data/phl.pdf?ua=1

continued into 2020, with 3,553 cases reported. The risk to children was heightened by the interruption to routine immunization services in the initial months of the pandemic as approximately only 25 per cent of eligible children were vaccinated over the course of 2020.⁶⁷

The Philippines had been declared polio free for almost 20 years, but in September 2019, poliovirus was confirmed in a 3-year-old girl from Lanao del Sur. Between the declaration of the outbreak and December 2020, at least 31 children infected with polio were detected and 17 cases manifested with acute flaccid paralysis, mostly in Mindanao provinces.⁶⁸

On 30 January 2020, the Philippines reported a third public health emergency with its first case of COVID-19. As of 31 May 2021, there were 1,223,617 confirmed cases and 20,860 deaths.⁶⁹ The government responded with strict lockdown measures, imposing an “Enhanced Community Quarantine” throughout many provinces. Under this quarantine, the population was required to stay at home unless provided with a pass to leave. The Philippines response to COVID-19 has been described as one of the longest and strictest lockdowns in the world, with violations met with punitive action.⁷⁰ These measures had significant impact on polio and measles outbreak response activities, owing to domestic travel restrictions and the postponement of vaccination campaigns.

However, in October and November 2020, a joint SIA for MR and OPV was permitted to take place, followed by Phase 2 in February 2021. This was led by the Government and supported by UNICEF and WHO. Robust precautions were put in place to mitigate the risk of COVID-19 transmission.

The key sources of information for this case study were campaign strategy documents and interviews with national-level UNICEF and WHO staff involved in campaign coordination, planning, implementation and monitoring. At the time of writing, only Phase 1 of the campaign had been finalized, and therefore the case study focuses predominantly on the experiences of this first phase. Phase 2 started in February 2021 but experienced some delays and continued throughout March and April to allow time for mop-ups.

PROGRAMME DESIGN

UNICEF and WHO recommended implementing an MR-OPV SIA in early 2020 as a result of risk assessment data that highlighted the nationwide risk of a large-scale measles outbreak. Yet, with COVID as a competing priority, the Government grew hesitant to conduct a campaign, leading to both agencies advocating and engaging key stakeholders at the DOH for it to proceed. The MR-OPV SIA was also postponed because of the need for the delayed third phase of a polio outbreak response to be completed in Mindanao and Regions 3 and 4.

After the Government’s confirmation that the SIA could go ahead, the DOH obtained support and commitment from various national agencies, including the COVID-19 Inter-Agency Task Force on Emerging and Re-emerging Infectious Diseases to ensure COVID-19 IPC protocols would be integrated into the SIA campaign. The DOH also took several decisive steps to provide the campaign with the best chance of high coverage: developing the *National Communication Strategy for the Synchronized Polio Outbreak Response and Measles-Rubella SIA*; establishing an NEOC for campaign coordination; activating the national polio and MR incident management system; and conducting a training of trainers course to build capacity of regional, provincial and city staff, supervisors and monitors.

UNICEF, together with WHO, provided technical assistance to the DOH in the pre-campaign preparations, implementation and post-campaign activities, including guideline development, microplanning, advocacy, communication, social mobilization and tailored supervision to each region.

⁶⁷ UNICEF Philippines. Measles-Rubella and Oral Polio Supplemental Immunisation Activity Amidst COVID-19 Pandemic: The Philippines Experience. 2020.

⁶⁸ Ibid

⁶⁹ WHO. Philippines: WHO Coronavirus Disease (COVID-19) Dashboard with Vaccination Data [Internet]. [cited 2021 June 20]. Available from: <https://covid19.who.int/region/wpro/country/ph>

⁷⁰ United Nations News. ‘Toxic lockdown culture’ of repressive coronavirus measures hits most vulnerable | UN News [Internet]. [cited 2021 Apr 27]. Available from: <https://news.un.org/en/tags/human-rights/date/2020/date/2020-04/audio/index.html>

IMPLEMENTATION

Campaign structure

The campaign took place in two phases. Phase 1 of the SIA was conducted in the five regions in Luzon and the six regions in Mindanao, from 26 October to 25 November 2020. Phase 2 of the campaign took place in the six remaining regions, including the National Capital Region in Luzon and the Visayas, in February 2021.

Over the course of both phases, the campaign aimed to vaccinate at least 95 per cent of all children aged 9 months to 5 years with the MR vaccine (approximately 9.5 million), and all children aged 0 months to 5 years old with bOPV (approximately 6.9 million), regardless of their vaccination status. The bOPV target was lower as this was administered in only 10 regions, whereas MR was administered across all 17.

The campaign was primarily delivered at fixed posts (health centres and hospitals) and temporary fixed posts that were established exclusively for the campaign. These were normally tent structures erected outside village halls, on basketball courts or school playgrounds. In certain locations where administration coverage was low, vaccination teams visited individual houses to improve accessibility. Previously, the Philippines has conducted MR campaigns with an almost exclusive house-to-house strategy, but WHO recommended a change in approach to ensure cold-chain security, prevent vaccine exposure to the elements, and better enable adherence to IPC measures.

In addition to managing the impact of COVID-19 on the SIA, the campaign had to contend with several other external factors. Security issues due to military operations and clashes with insurgent groups led to the postponement of vaccination in Regions 4A, 6 and 8. Heavy rains, rough seas and muddy terrain also caused transportation and access challenges in Quezon Province, Negros Occidental Province, Region 7 and Region 8.

Table 7: Target population by antigen and age, Philippines

Phase	bOPV* 0–59 months	MR 9–59 months
Phase 1 November 2020	2,140,096	4,362,647
Phase 2 February 2021	4,778,919	5,100,787
Total	6,919,015	9,463,434

*bOPV was implemented in 10 regions, whereas MR was administered across all 17.

For weeks 1 and 2, the campaign planned to focus on intensive and simultaneous vaccination and to follow up on deferrals and refusals. In weeks 3 and 4, provinces would conduct mop-up campaigns and conduct RCM supported by UNICEF consultants.

International development partners supported the campaign at a national and regional level, including UNICEF, WHO, International Federation of the Red Cross and Red Crescent and Rotary International.



Vaccinators had to contend with difficult terrain and conditions to access the population. A vaccinator transports OPV in a vaccine cooler in Barangay Paradise III, San Jose Del Monte, Bulacan.

Human resources and training

The local government in the Philippines is divided into three levels: provinces and independent cities, component cities and municipalities, and barangays, all of which are collectively known as Local Government Units (LGUs). After the end of the national lockdown, more localized quarantine measures were enforced when a COVID-19 case was detected. LGUs would not allow anyone to enter or leave the area, and while vaccination is considered an essential service, some Government officials postponed the campaign during this local lockdown period. This was particularly problematic in the areas of Cebu City, Iloilo City, Bacolod and certain municipalities in Aklan province, where there were rising COVID-19 case numbers at the time of the campaign. This complicated the coordination



An in-person interpersonal communication training with health workers, taking place in a well-ventilated space with mandatory physical distancing and mask wearing.



Briefing session and interpersonal communication training with village leaders and councillors.

and management of health care staff for vaccination teams. Health workers were required to quarantine for 14 days if they were in close contact with a COVID-19 case, resulting in staff shortages and delays to the campaign. In certain areas, vaccinators were asked to conduct COVID-19 contact tracing and case management, diverting their attention away from the campaign. There were also reports of certain LGUs reluctant to deploy vaccination teams in their area because of fear of further spread of COVID-19.

To combat these staffing issues, the DOH conducted a human resource mapping exercise at all levels, from field level to national, to plan the staffing requirements against the target population for each region. This exercise helped to identify gaps and was particularly helpful before Phase 2 of the campaign, as health care workers had a better understanding of operational challenges after Phase 1. To fill some of the staffing gaps, regional and provincial staff, including field monitors and supervisors, were utilized as vaccinators. Additionally, UNICEF utilized standby Memorandums of Understanding with local partners, to enable the rapid response of volunteers to regions should there be a staffing gap.

Training of staff at a national level took place predominantly via webinar, given restrictions on large gatherings. Interviewees reported some hesitancy from staff as virtual training typically does not provide as much support as face-to-face training. However, the facilitators made the training as engaging as possible and encouraged individual teams to watch the webinars in small groups. At local and health facility level, LGUs usually allowed training to take place in person.

UNICEF deployed eight consultants to high-risk areas, Regions 3, 4-A, NCR, 6, 7 and 8, to assist LGUs in SIA preparedness. Before the campaign, the consultants

conducted a readiness assessment of each region's preparations and supported any weak operational areas. Their support included microplan development, social mobilization, producing and distributing IEC materials, planning for adequate human resources and the training of vaccination teams, securing cold-chain storage capacity and equipment, and vaccine supply management.

International travel did not affect the campaign, but domestic and local restrictions were administratively burdensome. National consultants were required to take a COVID-19 PCR test and obtain a travel pass to visit the regions, as outlined by the Inter-Agency Task Force on COVID-19. This did not directly hinder the campaign; however, it required staff to be organized and forward thinking.

Infection prevention and control

WHO's operational guidance for maintaining essential health services during the COVID-19 outbreak⁷¹ was adapted to the Philippine context, also incorporating guidelines from the country's Inter-Agency Task Force.

The campaign amended the delivery strategy in several ways to adhere to this guidance. The duration of the campaign and the number of vaccination sites were increased, requiring additional staff. This worked to reduce crowding at any one site, while also improving access for those in harder-to-reach locations. Vaccination sites were required to be well ventilated or outside, sheltered by a marquee, disinfected regularly, and spacious, to enable physical distancing. Volunteers at each site assisted with crowd control. At certain sites, vaccination teams built clear screens at each vaccination station, between the vaccinator and the child and caregiver.

⁷¹ WHO. Maintaining essential health services: operational guidance for the COVID-19 context [Internet]. [cited 2021 Apr 14]. Available from: <https://www.who.int/publications/i/item/WHO-2019-nCoV-essential-health-services-2020>

Health workers and vaccination teams were required to wear a face mask and shield, practice hand hygiene before and after each immunization, and limit contact between themselves and the child and caregiver to less than 15 minutes. The caregivers were also required to wear face masks and were screened upon arrival at the site for a fever or cough. Only one person could accompany the child into the vaccination area.

There were some reports of poor implementation of COVID-19 IPC protocols at sites, but supervisors made efforts to respond to these and supported vaccination teams to apply measures effectively.

PPE was donated by WHO, with no reports of serious delays or shortages of equipment. However, the distribution of vaccines and vaccine equipment experienced some delays owing to the domestic travel restrictions. In some cases, this led to provinces sharing equipment.

Community engagement and social mobilization

The Department of Health – Health Promotion Bureau (DOH-HPB) along with UNICEF and WHO adopted a “whole-community approach”⁷² to engagement, in which all sectors and levels of the national community were targeted with advocacy, communication and social mobilization activities through various channels.

With support from UNICEF and WHO, the DOH-HPB conducted several interpersonal and community engagement online training sessions for health workers, vaccination teams, social mobilizers and other front-line workers. Government health promotion officers also conducted small group trainings via face-to-face sessions in areas with limited or no Internet access. A printed guidance handbook on interpersonal communication and community engagement was developed and provided to front-line health workers, social mobilizers and volunteers, for reference on key messages, answers to frequently asked questions, and how to respond to hesitancy and refusals.

The key aims of the social mobilization approach were:

- Sensitize all members of the community on the importance of the MR-OPV SIA to prevent an impending measles outbreak and end the polio outbreak
- Help community members understand how they can support the campaign and prepare them to act
- Address possible refusals and other issues that might reduce coverage
- Seek support from decision makers, leaders and influencers, including private doctors, paediatricians and celebrities



UNICEF, through Relief International, supported advocacy sessions with local officials to gain their support for the campaign.

National and local officials were engaged for their political support and commitment to the campaign through resource allocation. They were approached via virtual or in-person meetings, seminars and high-level events. They were sent request letters, and volunteers lobbied their offices to obtain backing. Non-government partners, including the private sector, professional organizations and NGOs, were targeted for their media and social media platforms, advertising slots, PPE donations, IEC material printing and a strong presence on the ground. They were engaged at an early stage of the planning process through meetings and direct requests. In total, 24 partners supported the campaign, including several private telecommunication companies (such as National Telecommunications Commission, Globe, SMART) who funded and coordinated “text blasts” informing their customers of the campaign.

The support of local community leaders, both traditional and religious, was required to raise awareness and address vaccine refusals. These figures were involved in joint planning sessions and orientation workshops ahead of the campaign. National faith organization Cathedral of Praise announced the campaign on its Bible Radio and The Church of Jesus Christ of Latter-Day Saints made an announcement during an online Sunday school class.

Parents and caregivers were engaged through various communication channels, including social media, online events, radio, TV, print materials and online webinars. In previous campaigns, social media platforms were used for announcements only, but to encourage engagement in a safe, virtual format, online webinars hosted by health staff provided parents and caregivers with an opportunity to ask questions, building trust and confidence in the campaign.

⁷² Philippines Department of Health, UNICEF, WHO. Training on Community Engagement. 2020.



Vaccination teams informing communities and raising awareness.

Specific messaging was developed for hard-to-reach and high-risk groups. For instance, for impoverished communities or less-educated groups, social mobilizers were asked to use simple and concise language, telling stories of those affected by measles and polio to explain the importance of the campaign. An inclusive approach was taken for caregivers or children with a disability. This included vaccinators making house visits with sign-language interpreters or audio materials for those who are illiterate or have visual impairments. For transient, mobile and displaced populations, campaign workers coordinated with local officials and community members to identify these families and their locations. They also worked with owners of housing rental facilities, authorities at border areas, camp managers and farm owners to try and reach these groups. For indigenous populations, IEC materials were translated to their local language, and to access those in conflict-affected areas, the campaign coordinated with local leaders to gain access and ensure the safety of vaccination teams.

After the completion of the polio outbreak response in the summer, there was limited time to prepare for the campaign. To help fill gaps in government personnel, UNICEF staff were deployed to support health promotion activities at provincial level. A UNICEF interviewee mentioned that the sense of urgency, paired with the opportunity to collaborate more closely with the Government, motivated staff and volunteers to be resourceful, creative and work more efficiently. Through implementing partners, UNICEF deployed social mobilizers and C4D officers in the hard-to-reach areas to support LGUs on the implementation of advocacy, communication and social mobilization activities, including addressing refusals.

Optimistically, as mentioned in the post-campaign assessment,⁷³ there was a strong sense of “*bayanihan*”. This

is a Philippine term for solidarity and cooperation during a crisis, in which communities come together to achieve a common goal.

Monitoring and evaluation

UNICEF introduced and supported the use of ODK and the tool was adapted to the DOH’s requirements and used across all regions to monitor daily coverage and track refusals and deferrals. UNICEF provided technical assistance with ODK at NEOC meetings at the national and regional level. The data were collected by each vaccine team using tally sheets, and a focal point at each health centre, usually a nurse or midwife, would input these data into the ODK system.

During the implementation of the SIA, supervisors monitored the quality of vaccine delivery using a checklist to guide their assessment, updated to include checks on IPC measures. Given staff shortages caused by the COVID-19 response, vaccination team leaders were required to carry out this role in certain provinces. This led to a weakened supervisory system, as vaccination teams were not typically trained in supervising and they were already burdened with considerable responsibilities. The reporting of AEFI cases was sporadic. In the National Capital Region and Region 8, there were very few cases of AEFI, suggesting there was an issue in underreporting. If comparing this with Region 3, where there were many reported AEFI cases, this could have led to public hesitancy or concern. WHO introduced a routine digital recording system to improve AEFI reporting, but additional training and enforcement are needed.

Towards the end of the campaign, UNICEF conducted RCM in high-risk communities, to identify areas that require mop-up campaigns and collect data on why children were missed and reasons for refusal.

Interviewees noted that refusals and deferrals were more widespread given the context of the pandemic. RCM identified the reasons for these refusals, and for Phase 1 they included people concerned that the vaccine was for COVID-19 as part of a Government-led trial, fear of health workers spreading the virus, and fear that the LGU would persecute them if they left their homes while COVID-19 restrictions were ongoing. In certain areas, there were cases of private paediatricians suggesting another vaccine dose was not necessary. Traditional reasons for refusals and deferrals persisted, such as religious beliefs, fear of vaccine quality, the child being sick, absence of parental consent, and vaccine hesitancy owing to a previous dengue vaccine scare.⁷⁴ These data were used to inform communication planning for Phase 2 and can also be used for future campaigns, providing vaccination teams and social mobilizers with an insight into the concerns of communities. UNICEF consultants in the field helped to address refusals during mop-up campaigns.

⁷³ UNICEF Philippines. Measles-Rubella Oral Polio Supplemental Immunization Activity (MR OPV SIA) Amidst COVID-19 Pandemic: The Philippines Experience. 2020.

⁷⁴ Wilder-Smith A, Flasche S, Smith PG. Vaccine-attributable severe dengue in the Philippines [Internet]. Vol. 394, *The Lancet*. Lancet Publishing Group; 2019 [cited 2021 Apr 29]. p. 2151–2. Available from: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(19\)32525-5/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)32525-5/fulltext)

Table 8: Rapid Convenience Monitoring estimates of children missed (%), Philippines*

Phase	bOPV		MR	
	0–11 months	12–59 months	9–11 months	12–59 months
Phase 1	2.6%	2.1%	6.5%	2.5%
Phase 2	4.4%	7.0%	6.6%	7.8%

*Estimates based on households surveyed for Rapid Convenience Monitoring (RCM); survey did not use a probability sample.

UNICEF facilitated a post-campaign assessment with regional and local government partners to discuss the accomplishments, challenges, good practices and lessons learned from the campaign. In certain regions, mobile loudspeakers were distributed to convey gratitude and appreciation to parents, caregivers and community members for their participation in the campaign. This was also used as an opportunity to remind parents and caregivers that immunization is a shared responsibility and children are required to complete the country's EPI schedule.

OUTCOME

For both phases of the MR immunization campaign, the overall nationwide administrative coverage was 90.3 per cent (8,545,434 vaccinated infants and children 9–59 months old). For both phases of the bOPV immunization, the overall nationwide coverage was 87.4 per cent (6,049,374 infants and children 0–59 months old).

After Phase 1 was completed, an online survey conducted through ODK and promoted on UNICEF and the DOH's

“Healthy Pilipinas” social media channels reviewed the social mobilization campaign. Of 3,797 respondents, 99.7 per cent said they had heard about the campaign before it started. Health workers were listed as the top source of information about the campaign, followed by social media, television broadcasts and local officials. However, it is worth noting that the survey was fairly limited in scope and reach.

Interviewees suggested the campaign should be viewed through a system-strengthening lens, in which the SIA bolstered the wider primary health care system, including supply chain management, training and capacity-building, and microplanning. UNICEF provided technical support to the DOH on the Social Behaviour Change Communication strategy and RCM, with a view to growing and improving the Government's role in future campaigns, routine immunization and other essential health services. UNICEF has recommended a review to update the National Immunization Communications Plan together with the DOH and WHO, to address vaccine hesitancy amid the COVID-19 pandemic. Interviewees stressed that the goal is ultimately for campaigns to be phased out and for there to be a permanent transition to robust routine immunization.

GOOD PRACTICES

1. A “whole-community” approach

The campaign partnered and collaborated with a diverse range of organizations and stakeholders, targeting government agencies, medical professionals, civil society, religious figures, the private sector and communities, to achieve the best outcome for the campaign.

2. Comprehensive and creative social mobilization

The campaign used consistent and effective messaging to convey the necessity of the campaign and the steps that were being taken to mitigate the risk of COVID-19 transmission at vaccination sites. The communication campaign appealed to all members of society through a variety of channels, including social media, mainstream media, large-scale SMS messaging and even merchandise in the form of t-shirts, umbrellas and masks.

3. Strong coordination mechanism between the DOH, UNICEF and WHO

Interviewees reported that the functionality and consistency of the NEOC meetings were valuable in addressing issues and helping to guide decision-making at all levels. The DOH and regional key officials have been praised for their leadership and visibility.

4. Committed health workforce

Health workers, volunteers and campaign staff were dedicated to delivering a successful campaign, despite the competing priorities they had to manage owing to the impact of COVID-19 and staffing gaps.

5. Adaptation of the delivery strategy to incorporate IPC measures and address low turnout

Vaccination sessions were carried out on holidays and weekends to maximize the time for vaccination and reduce crowding, and temporary mobile posts were increased in densely populated areas. This also provided better access opportunities and encouraged higher turnout. In LGUs with increasing COVID-19 cases, households and close contacts were recorded and returned to later in the campaign.

6. Data used to inform decision-making

Data collected by LGUs were used to monitor progress, identify low-performing areas and address underlying operational issues. The data were used to highlight vulnerable groups that required specific attention to achieve necessary coverage.

LESSONS LEARNED

1. Invest in a reliable supply chain system

Vaccine supply and equipment must be sustained at all levels through a predictable procurement and distribution system. Supply needs were miscalculated in certain areas owing to a lack of communication on target numbers. This led to teams borrowing vaccination carriers from other localities.

2. Grow the health workforce

Certain LGUs were reluctant to deploy more vaccination teams for fear of further spread of COVID-19; this caused strain on remaining workers. Future campaigns will benefit from additional health care staff and supervisors.

3. Normalize continuous on-the-job training

There were reports of staff misusing certain equipment, such as pre-filling syringes and using cold water instead of ice packs to carry vaccines, highlighting a clear need for supervisors and more experienced health workers to reinforce training and correct procedures.

4. Provide additional training and support on microplanning at a localized level

Interviewees reported some poorly developed local microplans that lacked required details such as spot maps and number of targeted children. Conversely, in certain areas, vaccination teams relied too heavily on microplans and did not actively seek out more eligible children.

5. Develop the funding distribution mechanism

Funding was slow to reach each region because of an issue at the national administrative level, leading to cash flow challenges.

CONCLUSION

The MR and polio SIA in the Philippines was a huge accomplishment. The “whole-community” approach helped to galvanize the country to both participate in and support the campaign, while also informing the public of COVID-19

IPC measures and changes to the delivery strategy. To progress the Philippines transition to comprehensive vaccine coverage, the DOH is working with UNICEF and WHO to support priority regions and LGUs to strengthen routine immunization services, supply chain and VPD surveillance for all antigens, to close the immunity gap.



YFE

MENN



A 3 year old child getting vaccinated in Al-Mualla district.

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YEMEN

2

Administrative Divisions

23

Governates

INTRODUCTION

Recognized as the world's worst humanitarian crisis for the past five years, the unrelenting protracted armed conflict continues to devastate Yemen's infrastructure, homes, food supply, economy and critical health services. An estimated 80 per cent of the population, including 12.4 million children, are in need of humanitarian assistance.⁷⁵ Access is an ongoing challenge owing to the escalating insecurity and political obstructions that hamper efforts of UNICEF and partners across the country.

The conflict's impact on children is overwhelming, with cases of malnutrition in children under 5 at the highest levels ever recorded; more than 325,000 are suffering from severe acute malnutrition and the United Nations has warned the country faces its worst famine in decades.⁷⁶ Preventable diseases are prevalent throughout the country, and morbidity and mortality are increasing as a result of limited immunization coverage. In 2019, WHO and UNICEF estimate coverage rates for DTP3 at 73 per cent, MCV2 at 46 per cent and Pol3 (third dose of IPV or OPV) at 67 per cent.⁷⁷ As a result, the country is seeing frequent outbreaks of measles, diphtheria and other preventable diseases. Since August 2020, Yemen has confirmed 33 cases of VDPV type 1.⁷⁸ An outbreak of diphtheria affecting all governates has also been ongoing since 2017, with an estimated 5,343 cases reported by the end of July 2020.⁷⁹

⁷⁵ UNICEF. Humanitarian Action for Children Yemen [Internet]. [cited 2021 May 4]. Available from: www.unicef.org/appeals/yemen

⁷⁶ Ibid.

⁷⁷ UNICEF, WHO. WHO vaccine-preventable diseases: monitoring system. 2020 global summary [Internet]. [cited 2021 May 4]. Available from: https://apps.who.int/immunization_monitoring/globalsummary/estimates?c=YEM

⁷⁸ GPEI. Yemen Country Overview [Internet]. [cited 2021 May 4]. Available from: <https://polioeradication.org/where-we-work/polio-outbreak-countries/yemen/>

⁷⁹ Ongwae, K., Sule, V., et al. Lessons from Yemen: Diphtheria and Polio Campaign in the Context of COVID-19. *Glob J Health Sci* [Internet]. 2020;12(12). Available from: <https://doi.org/10.5539/gjhs.v12n12p141>

The humanitarian situation was further intensified in 2020 by the COVID-19 pandemic. Yemen reported its first case of COVID-19 on 10 April 2020. As of 31 May 2021, there were 6,737 confirmed cases and 1,302 deaths,⁸⁰ but this is likely underestimated given the country's extremely limited testing capacity. The health care system is not set up to cope with this additional strain, with only half of the country's 5,000 health facilities considered fully functional.⁸¹ Lockdown measures were put into effect, including the suspension of international flights, a 12-hour curfew and the closure of schools, restaurants, parks and wedding venues. These measures varied depending on the area of control; in more stable governates, such as Hadramawt and al-Mahra, local authorities enforced curfew measures, restricted inter-governate travel and coordinated the health response within the context of broader conflict-management measures.⁸² However, for the 3.6 million people estimated to be displaced in Yemen,

the pandemic exacerbated existing vulnerabilities. Overcrowded living conditions, underlying health conditions and poor hygiene and sanitation in areas with internally displaced people (IDP) heightened the risk of contracting coronavirus.

On 9 April 2020, a unilateral two-week ceasefire called by the Saudi-led coalition came into effect. The coalition stated it wanted to support United Nations efforts for a political solution and help focus on the response to COVID-19. Despite some optimism that this action would lead to a more permanent ceasefire, fighting continued to escalate.⁸³

Against this complex backdrop, all immunization campaigns, integrated community outreach and mobile team activities were suspended in March 2020. However, after the publication of WHO's decision-making framework,⁸⁴ UNICEF and WHO advocated for campaigns to restart. In July 2020 a diphtheria

PROGRAMME DESIGN

Yemen is divided into two main administrative divisions; there are 23 governates, with each of these divided into districts, of which there are 333 in total.

The subnational diphtheria campaign was the first to take place after the suspension of activities owing to COVID-19. It occurred from 4 July to 19 July 2020 across five governates: Aden, Al-dhalea, Almarah, Taiz, and Lahj, vaccinating 1.1 million children (75 per cent of the target) aged 6 weeks to 15 years. The Ministry of Public Health (MOPH) was initially difficult to engage with, given the absence of several key decision makers, but the coordinated efforts of UNICEF and WHO resulted in their approval of the campaign and helped to achieve an enabling environment. The WHO guidance for immunization activities during the COVID-19 pandemic⁸⁵ was adapted to the Yemen context with a concept note and risk mitigation matrix and used to advocate to local authorities.

Shortly after the completion of the diphtheria campaign, an integrated bOPV and vitamin A campaign that had been postponed in March was implemented in 13 governates between 25 July and 17 August 2020. The campaign vaccinated 1.2 million children under 5 years, achieving 96 per cent of its target.

Both subnational campaigns demonstrated a high demand for vaccination among the population, particularly when compared with previous polio campaigns (none of which achieved 96 per cent administrative coverage). The published lessons learned report suggests this high demand was a result of the postponement of services from March to July 2020, as there was a similar trend after the Ebola outbreak in West Africa, in which the population demanded widespread vaccination services.⁸⁶

The two campaigns in the summer months can be considered a success owing to the high coverage rates and the achievement of conducting a campaign during the COVID-19 pandemic. However, further action was required to respond to the growing polio outbreak.

The MOH, UNICEF, WHO and health cluster members met weekly to monitor all VPD and COVID-19 cases, but because of the political situation, negotiating access is always an arduous process, particularly in the country's northern governates. UNICEF's Supply Division was informed that a national polio campaign would be necessary and to hold the required quantity of polio vaccine. By the autumn, the MOPH agreed that a national polio campaign was required, owing to the high numbers of cVDPV. UNICEF and WHO conducted a risk assessment to confirm the viability of a nationwide campaign.

⁸⁰ WHO. Yemen: WHO Coronavirus Disease (COVID-19) Dashboard with Vaccination Data [Internet]. [cited 2021 June 20]. Available from: <https://covid19.who.int/region/emro/country/ye>

⁸¹ UNICEF. Humanitarian Action for Children Yemen [Internet]. [cited 2021 May 4]. Available from: www.unicef.org/appeals/yemen

⁸² Middle East Institute. Yemen's botched pandemic response and fragile conflict dynamics allow COVID-19 to spread undetected [Internet]. [cited 2021 May 5]. Available from: <https://www.mei.edu/publications/yemens-botched-pandemic-response-and-fragile-conflict-dynamics-allow-covid-19-spread>

⁸³ The New York Times. No Respite in Yemen War a Week After Saudi Ceasefire Announced [Internet]. [cited 2021 May 5]. Available from: <https://www.nytimes.com/2020/04/16/world/middleeast/yemen-cease-fire-covid19.html>

⁸⁴ WHO. Framework for Decision Making: Implementation of mass vaccination campaigns in the context of COVID-19. 2020.

⁸⁵ WHO. Maintaining essential health services: operational guidance for the COVID-19 context interim guidance [Internet]. [cited 2021 Apr 14]. Available from: <https://www.who.int/publications/i/item/WHO-2019-nCoV-essential-health-services-2020>.

⁸⁶ Ongwae, K., Sule, V., et al. Lessons from Yemen: Diphtheria and Polio Campaign in the Context of COVID-19. *Glob J Health Sci* [Internet]. 2020;12(12). Available from: <https://doi.org/10.5539/gjhs.v12n12p141>

campaign, followed by a polio campaign, was implemented in 13 governates. After the success of these subnational SIAs, and utilizing the lessons learned, a nationwide bOPV campaign was carried out in November and December 2020.

This case study will focus primarily on the national bOPV campaign; however, it will consider how the diphtheria and subnational polio campaign supported the roll-out of the countrywide programme.

The key sources of information for this case study were campaign strategy documents and interviews with national-level UNICEF and WHO staff involved in campaign coordination, planning, implementation and monitoring.

IMPLEMENTATION

Campaign planning

Due to the conflict, Yemen is divided into areas of control; the southern governates are predominantly controlled by the internationally recognized Yemeni government and the northern governates are controlled by the Houthi forces. UNICEF and WHO were able to negotiate access for vaccination teams in all governates apart from Sa’adah in the north of the country. The national polio campaign was conducted with the standard delivery method of house-to-house and fixed sites.

At the national level, the Polio Task Force consisted of technical members from the MOPH, EPI Task Force, Acute Flaccid Paralysis Surveillance, WHO, UNICEF, health cluster

UNICEF established an internal country office task force for the polio outbreak response. It worked closely with WHO and held technical coordination meetings on a weekly basis and with regional offices every fortnight.

In advance of the campaign, UNICEF supported the MOPH with forecasting the required quantity of vaccines and equipment, in addition to developing the supply and cold-chain distribution plan. UNICEF calculated vaccine storage capacity for all provinces and districts to ensure there was as little wastage as possible. The vaccines were procured through UNICEF’s Supply Division and delivered in two shipments; 1.4 million doses were received by the vaccine store in Aden on 16 November, and 5.1 million doses were received by the main vaccine store in Sana’a on 17 November, before being distributed to northern and southern governates the following week. The quantity allowed for approximately 10 per cent wastage, but after the campaign, an average of 7 per cent was reported in northern governates and 4 per cent in southern governates. In certain districts, the wastage was higher, such as in Amanat Al Asimah (13 per cent), Sana’a (12 per cent) and Marib (10 per cent), suggesting teams in these areas could benefit from additional training or supervision.

The distribution of vaccines, masks and gloves was completed a week before the campaign, with other supplies, including finger markers and printed materials, being distributed by WHO.

Human resource and training

The composition of the vaccination teams at field level consisted of one vaccinator, one recorder and one

Table 6: Adherence to IPC measures during immunization session, Papua New Guinea

Round	Date	Area	Target
Round 1	5–7 December 2020	All southern governates	1.2 million children under 5 years
Round 2	28–30 November 2020	All northern governates (apart from Sa’adah)	4.1 million children under 5 years
Round 3	2 December 2020 (for 12–15 days)	Sa’adah	178,000 children under 5 years 35,000 pregnant women

*Sa’dah had three separate rounds of integrated services (bOPV, MR, diphtheria, and EPI antigens with nutrition and WASH interventions) owing to refusal of mass vaccinations.

representatives and other implementing partners. The task force convened regularly to support the implementation and address challenges. By the start date of the campaign, the coordination mechanism between UNICEF, WHO and the MOPH was robust, as it had been consistently in place since the start of the COVID-19 pandemic. Interviewees reported that once the MOPH agreed to the campaign, it was proactive in campaign planning and implementing measures to prevent COVID-19 transmission.

community mobilizer. This is consistent with previous campaigns and was not altered owing to COVID. In the initial months of the pandemic, there was some hesitancy and concern from health workers regarding providing essential health and immunization services. However, following the guidance provided by UNICEF and WHO on IPC measures and PPE becoming more readily available, confidence in carrying out these services grew. By the start of the national campaign, there were no major issues with recruitment, as most teams were staffed by volunteers

eager to work for financial incentives. The World Bank funded these staffing and incentive costs.

Given COVID-19 travel restrictions and security concerns, international consultants were required to support the campaign remotely, from outside Yemen. This included a polio consultant, vaccine management consultant and a C4D consultant. In addition, WHO engaged several national consultants to support their activities.

Training sessions for vaccination teams and supervisors were carried out before the campaign. Managed by WHO with support from UNICEF, sessions included campaign implementation, vaccine management, IPC with a focus on COVID-19, and the appropriate use of PPE during vaccination activities. As part of the campaign's Third-Party Monitoring (TPM) system, a readiness assessment of vaccination teams was carried out based on observations gathered at 65 training sites across all governorates (not including from Sa'adah). The monitors assessed which trainers gave sessions on various topics, including registration and reporting, communication



A vaccination team in Yemen, walking to their next site.

and campaign strategy. They also assessed the quality of the training; 64 per cent of trainees stated that the training was excellent, while 26 per cent said the training was good and 10 per cent said it was poor. Implementation of IPC measures during the training were also assessed: 69 per cent of observed trainees were wearing face masks, 33 per cent were wearing gloves, and 21 per cent were observed using hand sanitizer. Physical distancing was only implemented by 29% of trainers as there were a limited number of venues with sufficient space, making this measure difficult to implement.

The post-campaign evaluation report⁸⁷ included several lessons learned regarding the pre-campaign training and performance were included. Team trainings were shortened to reduce the amount of time groups were spending together, however this impacted the value of the training as sessions were reduced and less thorough. Staff and volunteers also needed to better understand the importance of finger-marking to monitor coverage rates, as in certain districts, this was not carried out. Additionally, there were reports that supervisors distributed supplies to teams but did not provide additional guidance or monitor IPC practices. Despite these drawbacks, most health workers and volunteers were reportedly committed to the campaign, had valuable previous experience and were strongly engaged in the successful implementation of the programme.

Infection prevention and control

IPC measures were a critical addition to the delivery strategy of the campaign. WHO and UNICEF technical officers in



A vaccination team in Yemen, walking to their next site.

country adapted the WHO operating guidelines⁸⁸ to Yemen's complex context. These guidelines were incorporated into the training package and into supervisory checklists.

With the lessons learned from July's diphtheria campaign, early planning, procurement and distribution of PPE helped ensure the campaign could start on time and be implemented safely. This reinforced confidence in the campaign's safety among authorities and communities. WHO funded PPE supplies, and this was sufficient to cover all health workers and volunteers, supply chain and distribution staff. The quantities needed were estimated based on the number of campaign days and participants and how many times materials needed to be refreshed.

⁸⁷ Ministry of Public Health, UNICEF, WHO. Yemen Polio Outbreak Response, Round 1 Report. 2021

⁸⁸ WHO. Maintaining essential health services: operational guidance for the COVID-19 context interim guidance [Internet]. [cited 2021 Apr 14]. Available from: <https://www.who.int/publications/i/item/WHO-2019-nCoV-essential-health-services-2020>

Another lesson carried forward from the earlier campaign was that vaccination teams required social mobilizers to also act as crowd control, helping to clear gatherings. The TPM report observed 72 per cent of vaccination teams wearing a face mask, 80 per cent wearing gloves and 58 per cent using hand sanitizers. For fixed sites, the monitors reported 75 per cent of vaccination teams organized caregivers and children into a physically distanced queue.

Community engagement and social mobilization

The C4D strategy was led by UNICEF and adapted to the COVID-19 context. Social mobilizers were trained on the engagement strategy, including how to protect themselves and communities from the spread of COVID-19. For instance, community gatherings were limited to small groups of six and volunteers increased the number of household visits made, to encourage attendance but limit crowding. To counterbalance the COVID restrictions, activities began a week before the campaign and efforts were made to inform and engage the population through other channels.

More than 10 million people were estimated to have been reached through broadcast news flashes, public service announcements and dedicated discussion programmes, aired on 11 television channels and 16 radio stations. Religious leaders, both male (Imams) and female (Morshydats) supported activities by announcing the campaign at mosques and creating WhatsApp groups with their communities to share information. Mosques have been positioned as information- and knowledge-sharing platforms that are a trusted source for mobilizing the population.

The C4D strategy involved adolescent girls and boys by asking them to act as behaviour change agents through peer-to-peer support, using their understanding of social media to encourage open discussion among communities and their own families in a creative and fun way. C4D implemented targeted activities to engage internally displaced communities, marginalized groups and host communities. Materials and banners were produced and displayed in strategic locations to inform communities of the campaign, particularly in low-coverage areas. These materials were developed by UNICEF's C4D team in conjunction with the MOPH. Social mobilizers travelled in tuk-tuks with megaphones to make announcements and provide practical information.

To enhance the reach of the communication strategy, the C4D team utilized relationships with several government ministries, including environment, education and community departments, to request them to inform their network of the campaign. All government departments and officials were required to support activities where possible. C4D also worked with six local partners who supported with social mobilization activities on a local level.

After the diphtheria SIA, a focus-group discussion was held with parents and caregivers to explore what communication methods had worked ahead of the campaign. The community disclosed that they felt reassured by health workers' commitment to IPC measures and PPE use and were encouraged to see volunteers wearing masks and gloves and practising physical distancing. For the national campaign, communication materials emphasized that precautionary measures were being taken to maintain this level of trust.

Fortunately, COVID-19 did not seem to have affected community acceptance or coverage rates. The coverage achieved was 93 per cent, which is in line with the previous campaign before the pandemic and higher than an SIA in 2019. Interviewees agreed that the additional social mobilization activities significantly aided this effort.

Monitoring and evaluation

As per SOPs, vaccination teams were required to complete daily tally sheets to report the number of children vaccinated. The MOPH's operational centre utilized these data to guide decision-making for the following day. UNICEF and WHO supported the supervision of the campaign at central, governorate and district levels, utilizing five field offices and providing telemonitoring for areas difficult to access. WHO provided independent monitors in various locations in the north and south of the country.

A day before the campaign and during implementation, UNICEF began hosting a daily 30-minute briefing with field offices to review preparedness and daily activities and to identify issues that might need addressing the next day. These briefings were organized for the first time during the diphtheria campaign and were considered highly useful for coordination; field teams provided information on the challenges they were facing and were assisted with actions that needed to be taken.

TPM was requested by UNICEF to monitor progress and quality in all governorates except Sa'adah. The monitoring was conducted by local partner Prodigy Systems and took place in 310 out of 333 districts. In some districts, monitoring was not possible, owing to insecurity or lack of permission. The main indicators monitored for this exercise were:

1. Vaccination team's availability and readiness (training, availability of vaccines and equipment)
2. Vaccination team's adherence to microplans and guidelines
3. Cold-chain system (quality of vaccines storage)
4. Implementation and supervision of the OPV vaccination activity
5. Social mobilizers' availability and readiness
6. Household vaccination coverage

The TPM targeted 3,265 vaccination teams, equating to 15 per cent of the total number of teams deployed by the MOPH. The exercise highlighted a mix of successes and limitations across all indicators. Prodigy Systems submitted daily updates to UNICEF and this information was discussed during the daily briefing.

An independent post-campaign assessment was conducted in 300 districts, screening an estimated 2.1 per cent of the targeted children. The sample size in each district was based on the risk level, which was determined by performance in previous NIDs, routine EPI coverage and acute flaccid paralysis surveillance performance, as per GPEI global guidelines on independent monitoring.⁸⁹

The results of the assessment show that 95 per cent of the houses selected were visited by vaccination teams, with 72 per cent of the houses recorded correctly. As per parents' recall, 92 per cent of children under 5 were vaccinated, with 66 per cent identified with finger marks. Most children vaccinated, 96 per cent, received their vaccine at home, with the remaining receiving it in health facilities or mobile sites. When asking families if they were aware of the campaign before it started, 63 per cent answered positively.⁹⁰ The finger-marking indicator varied widely between governorates. The governorate of Raymah achieved 96 per cent coverage, whereas Sacotra recorded no finger marks. This suggests vaccination teams required additional training on the importance of this activity. The reasons for unvaccinated children were reported as vaccination team did not attend the house (35 per cent), the child was not available (35 per

cent), vaccine refusal (20 per cent), sleeping or sick child (3 per cent) and other (7 per cent).

A Lot Quality Assurance Survey was conducted by WHO for the first time in Yemen, to reliably identify areas of poor coverage and enable trend analysis of campaign quality. The Survey took place in selected areas of Aden and Sana'a and was based on the same criteria as the assessment: recall and finger-marking. In 4 of the 22 areas selected, 90 per cent of children were finger marked. However, the remaining areas reported either "some problems" or "serious problems" with finger-marking. Based on parents' recall, 11 of the 22 areas reported that more than 90 per cent of children were vaccinated.

OUTCOME

The national polio outbreak response vaccinated a total of 5,018,283 children, 93 per cent of the total target. This breaks down to 3.7 million children (91 per cent) vaccinated in the north and 1.3 million children (100 per cent) vaccinated in the south.

The outreach campaign in Sa'adah included vaccinations against polio, diphtheria and measles, with integrated management of childhood illness services and nutrition interventions. A total of 199,601 children under 5 were targeted, achieving 74 per cent coverage.

GOOD PRACTICES

1. Lessons learned from smaller campaigns informed this response

The successes and challenges of the subnational diphtheria and polio campaigns in July and August 2020 were used to inform the planning for the national campaign. Most notably, the coordination mechanism put in place between the MOPH, UNICEF, WHO and partners was continued for the national polio response. Previously, communication had taken place on a predominantly bilateral basis.

2. Adolescents were engaged as agents of social behavioural change

Adolescent girls and boys were recruited to take part in the Sponsor a Child Initiative. They used their understanding and experience of social media to engage the community and inform those who refused the vaccine, in a creative and fun way.

3. Guidance from UNICEF and WHO enabled the MOPH to safely approve the campaign

UNICEF and WHO advocated for the campaign, conveying the importance of it going ahead before the end of the year. Utilizing WHO's decision-making framework,⁹¹ they provided the MOPH with data and information necessary to authorize the campaign and created an enabling and cooperative environment.

4. Vaccination teams had a positive composition

Third party monitoring identified that 71 per cent of surveyed vaccination teams had at least one female member. A large majority of teams (84 per cent) were made up of health care workers and volunteers from the local area, who could utilize their homegrown knowledge and understanding.

⁸⁹ GPEI. Global Guidelines Independent Monitoring of Polio Supplementary Immunization Activities (SIA) [Internet]. [cited 2021 May 10]. Available from: https://polioeradication.org/wp-content/uploads/2016/08/IndependentMonitoringGuidelines_20101124.pdf

⁹⁰ Ministry of Public Health, UNICEF, WHO. Yemen Polio Outbreak Response, Campaign Report 1. 2020.

⁹¹ WHO. Framework for Decision Making: Implementation of mass vaccination campaigns in the context of COVID-19. 2020.

5. Comprehensive monitoring and evaluation activities were undertaken

The campaign undertook a series of M&E activities to support implementation of the campaign and record lessons learned to inform future programming.

6. Significant coverage was achieved nationally

The campaign was successfully implemented despite an ongoing conflict, significant humanitarian access challenges and the COVID-19 outbreak.

7. Advanced logistical planning enabled smoother implementation

UNICEF's Supply Division were informed as early as possible that a polio campaign would be taking place before the end of the year, ensuring that sufficient stock was available and ready to be imported once the MOPH approved the campaign.

LESSONS LEARNED

1. Emphasize importance of finger or door marking

Additional training is required for vaccination teams to understand the importance of reporting vaccination doses by finger or door marking. The training schedule in general could have benefited from being extended in duration to ensure the sessions were not rushed and they allowed time for practising and questions.

2. Provide additional support on microplanning and how to revise plans when needed

All teams should be provided with a hard copy of microplans and itineraries. Before the next campaign round, microplans and local maps should be adapted in areas where deficiencies were observed and zero-dose children were identified.

3. Revise daily reporting tools

Data collected on the campaign could be enhanced by updated reporting tools; for instance, the classification of missed children should be divided into "not available" and "refusal".

4. Develop stronger coordination between vaccination teams and social mobilizers

Interviewees reported weak communication channels in certain areas, meaning vaccination teams were unable to contact social mobilizers to support with refusals. This could be improved with advanced planning and providing vaccination team leads with a list of contact details for local social mobilizers.

CONCLUSION

Yemen is arguably the hardest context in which to implement a national polio campaign. It incorporates negotiating political access across conflict zones, challenging geography, enhanced security measures, a huge majority of the population requiring humanitarian assistance and, in 2020, campaign planners and health

workers were also required to navigate the COVID-19 pandemic.

Learning from the two smaller campaigns in the summer months, the MOPH, UNICEF, WHO and other partners implemented a successful SIA that integrated required IPC measures, the need for advanced planning and a comprehensive C4D strategy.

APPENDICES

Appendix 1: Data-collection instruments for regions and countries

Survey questions

Section 1: COVID-19 context in country

- 1a. What COVID-19 government control measures were in place at the time of the campaign (e.g., national or local lock down, travel restrictions, border closures)? Text
- 1b. How did these measures affect the campaign? Text
2. To the best of your knowledge, did COVID-19 have an impact on vaccine-preventable disease (VPD) surveillance in your country? Text

Section 2: Implementation of the campaign

3. What vaccine/s were delivered? Text
- 4a. Was the vaccine offered as a planned preventive campaign or outbreak response? Multiple-choice – planned preventive or outbreak response
- 4b. If the campaign was an outbreak response, was the outbreak occurring in a fragile setting or affecting a vulnerable sector of society (e.g., during humanitarian crisis, an IDP (internally displaced people) camp, refugee population, hard-to-reach or nomadic community, ethnic or religious minority)? Yes/No
5. Was the vaccine campaign on a national or subnational level? Multiple-choice – national or subnational
6. Start date of campaign? Date
7. What was the target population/age group? Text
8. Did the campaign or phase reach its target (or 90 per cent) for number of people vaccinated as planned? Yes/No
9. Did the country use WHO's Framework for decision-making: implementation of mass vaccination campaigns in the context of COVID-19, to support with the decision-making and planning for a VPD campaign? Yes/No
10. Please provide any detail on the immunization delivery strategy used during the COVID-19 pandemic (e.g., fixed-site, outreach, mobile, house-to-house). Text
11. What changes were made in campaign strategy to overcome challenges caused by the COVID-19 pandemic? Text
12. Were any special or innovative strategies implemented owing to the campaign taking place in a high-risk area or high-risk population for COVID-19 infections? If yes, please briefly describe. Text
13. Was the vaccine campaign used to deliver other interventions as well; e.g., a multi-antigen campaign, deworming, vitamin A supplements? If yes, please briefly describe. Text
14. How did you engage with the community ahead of the campaign? Text
15. What steps did you take to build trust, address community fear, and reassure the community that best practices would be implemented to prevent the spread of COVID-19 infection? Text

Section 3: Infection prevention and control (IPC) measures

16. Was COVID-19 screening available at the vaccination sites for all attendees (e.g., temperature checking, symptom checking)? If yes, please describe these measures. Text
17. Were any of the following measures taken to mitigate against the risk of COVID-19 transmission? Please check all boxes that apply. Checkbox
 - a. Increasing duration (days) of the campaign to reduce number of people at sites at any one time
 - b. Increasing number of sites to reduce number of people vaccinated per site
 - c. Increasing size of vaccination teams to support with crowd control
 - d. Increasing number of teams, to reduce daily targets
 - e. Decentralizing vaccination sites, using empty public or private premises
 - f. Using outdoor spaces to support physical distancing
 - g. Using non-traditional methods to deliver vaccine; e.g., supervised self-administration of oral cholera vaccine or oral poliovirus vaccine to reduce physical contact between vaccinators and recipients
 - h. Establishing exclusive vaccination sessions for people with pre-existing medical conditions
 - i. None
 - j. Other
18. What IPC measures were put in place at the vaccination site/s to protect health workers and those attending? Please check all boxes that apply. Checkbox – masks, handwashing, gloves, physical distancing, other, none
- 19a. Did the campaign face any challenges with access to IPC supplies? If yes, please briefly describe. Text
- 19b. If yes to 19a, did this delay the start of campaign? Yes/No
20. Were vaccinators followed up with after the campaign to monitor for COVID-19 infection among them? Yes/No

Section 4: Routine immunization and integration

- 21a. Was routine immunization still being offered in country before or during the campaign? Yes/No
- 21b. If yes to 21a, were any measures in place to mitigate against the risk of COVID-19 (e.g., physical distancing, personal protective equipment [PPE] requirements)? Text
22. Were any changes made to routine immunization services to enable delivery within the context of COVID-19 (e.g., increasing outreach sessions)? If yes, please briefly describe. Text
23. Was the vaccine campaign integrated with or used to strengthen primary health care services in any way? If yes, please briefly describe. Text
24. Were any activities undertaken during the campaign to identify zero-dose children or zero-dose communities? If yes, please briefly describe. Text

Interview questions

1. Background Information
 - a. Invite the participant to briefly talk about their background, work, and role in the vaccination campaign.
2. Potential impact of vaccine-preventable disease (VPD) transmission in country
 - a. What vaccine/s were delivered? Can you confirm the date of the vaccine campaign?
 - b. Was the vaccine campaign on a national or subnational level?
 - c. What was the campaign target age group?
 - d. Was the campaign delivered as a preventive measure or as outbreak response?
 - e. If the campaign was an outbreak response, was the outbreak occurring in a fragile setting or affecting a vulnerable sector of society (e.g., during a humanitarian crisis, an IDP [internally displaced people] camp, refugee

population, hard-to-reach or nomadic community, ethnic or religious minority)?

- f. Describe the epidemiological situation of the VPD that the campaign protected against. Consider the following areas:

- i. Population susceptibility
- ii. Seasonal patterns and the impact on transmission of a disease
- iii. If in response to an outbreak, what was the intensity and magnitude of transmission?
- iv. If in response to an outbreak, what is the sociopolitical context of the outbreak's location (e.g., in a conflict zone or IDP camp)?
- v. If in response to an outbreak, were cases localized or in multiple areas? Was there a risk of international spread?

3. COVID-19 context in country

- a. Describe the COVID-19 transmission scenario within the country, or more specifically the region, in which the campaign took place. Please provide details about the severity of the situation at the time of the campaign.
- b. Describe the type and level of control measures and interventions imposed by the government or public health authorities (e.g., national or local lockdown, travel restrictions, border closures).
- c. How did COVID-19 and lockdown measures affect the campaign? How delayed was the campaign?
- d. Describe, to the best of your knowledge, the country's capacity to implement COVID-19 infection prevention and control measures.
- e. In your opinion, did communities generally adhere to these measures?
- f. Once a campaign was confirmed, was it delayed at any stage owing to the risk of COVID-19 transmission?
- g. Describe, to the best of your knowledge, whether COVID-19 had an impact on VPD surveillance in your country.

4. Campaign planning and assessing risk

- a. Describe the decision-making process for implementing the vaccination campaign. Who was involved in this process?
- b. Did you refer to the WHO's Framework for Decision-Making? If so, did you find it useful? If not, was there a reason for not doing so?
- c. Did you conduct a risk–benefit analysis for conducting the campaign? If so, please describe this process and identify some of the risks. If not, what was the reason for not doing so?
- d. Were any other VPD outbreak control measures considered or put in place before committing to a vaccine campaign? If so, please describe in more detail. If not, what was the reason for not doing so?
- e. Was a readiness assessment (or similar tool) carried out to assess the country's preparedness level regarding planning and coordination, logistics, supply chain, staffing, comms and monitoring and evaluation (M&E)? If so, did this assessment consider the impact of COVID-19?
- f. Did the campaign coordinate with the ministry of health (MOH) or COVID-19 task force in preparation for the campaign? Please describe.
- g. Please provide any detail on the immunization delivery strategy used during the COVID-19 pandemic (e.g., fixed-site, outreach, mobile, house-to-house)?
- h. What changes were made in implementation planning or delivery strategy because of the COVID-19 pandemic as compared with previously (pre-pandemic) conducted campaigns?
- i. Were any changes made to the target population for the campaign owing to COVID-19?
- j. Were any special or innovative strategies implemented owing to the campaign taking place in a high-risk area or high-risk population for COVID-19 infections? If yes, please briefly describe.
- k. Other than COVID-19, what external factors affected, or had the potential to affect, the vaccination campaign (e.g., political unrest, ongoing conflict, displacement, seasonal weather)?
- l. Were standard security processes or measures altered because of COVID-19? If so, please describe.
- m. Was the vaccine campaign used to deliver other interventions as well; e.g., a multi-antigen campaign, deworming, vitamin A supplements? If yes, please briefly describe.

5. Human resources (HR) and training

- a. Describe the staffing structure in place for the campaign.
- b. Describe the composition of each vaccination team. Was this altered because of COVID-19? If yes, what were the changes?
- c. What were the key challenges regarding staffing?
- d. Did you have additional staffing needs compared with previous campaigns, because of COVID-19?
- e. Did you use any innovative or different practices to support with staffing or HR processes? If so, please

describe in more detail. If not, what was the reason for not doing so?

- f. Were you able to hire or utilize international consultants? If so, did they support remotely?
- g. If international consultants were not used, because of COVID-19, how did you fill these gaps? Were national consultants or in-country partners utilized?
- h. Describe the training plan for health workers and vaccination teams.
- i. Describe the training plan and process for volunteers.
- j. Was training held in person or virtually? What changes were made to the training plan in relation to COVID-19? Please describe how training was conducted and the challenges/successes experienced.
- k. Were staff and volunteers followed up with after the campaign, to monitor for COVID-19 infection? If so, please describe in more detail. If not, what was the reason for not doing so?

6. Infection prevention and control (IPC) measures

- a. Were IPC standard operating procedures (SOPs) put in place at the vaccinating facilities/within house-to-house teams? If so, please describe in more detail. If not, what was the reason for not doing so?
- b. Were IPC measures put in place at the storage/warehouse facilities? If so, please describe in more detail. If not, what was the reason for not doing so?
- c. Were staff trained in IPC measures? If so, please describe in more detail. If not, what was the reason for not doing so?
- d. Were IPC measures supervised to ensure they were enforced throughout the campaign?
- e. Please describe the process regarding personal protective equipment (PPE) planning. Were national guidelines used? Or did you rely on WHO/UNICEF guidelines on PPE?
- f. How were PPE supplies procured? Were supplies obtained in country or imported? Were these procured through UNICEF's Supply Division or another mechanism?
- g. Did you face any challenges in procuring PPE or cleaning supplies? If so, how did you address the challenges? Any innovative approaches?
- h. Were there any challenges in receiving PPE supplies through customs? Were there any regulatory or policy changes made to expediate customs process, owing to the critical nature of the supplies?
- i. Were staff asked to wear PPE? Did staff have access to adequate PPE supplies (such as masks, gloves, gowns, hand sanitizer, soap, water and cleaning supplies)?
- j. Did PPE vary depending on job roles? Please describe in detail.
- k. Were those being vaccinated asked to wear PPE? If so, what type? Was this provided by the programme or were attendees asked to bring their own PPE?
- l. If the campaign was delivering oral vaccines, was supervised self-administration implemented to reduce physical contact?
- m. Was COVID-19 screening available at the vaccination sites (e.g., symptom checking)? If so, please describe in more detail. If not, what was the reason for not doing so?

7. Supply and cold chain

- a. Were supplies of the vaccine available in country or imported?
- b. What challenges did you face with procuring vaccine supplies? If imported, did you face challenges with the customs process? Were there any policy changes made to expedite the customs process for vaccines? Did any partner agencies support this process?
- c. Describe the process for transporting the vaccines. How did you plan for this and mitigate against risks?
- d. Where were the vaccines stored? Were there any challenges?
- e. How did you forecast potential requirements for essential supplies?
- f. How did COVID-19 affect the cold chain?
- g. How did COVID-19 affect the supply chain for non-medical equipment?

8. Logistics (fixed site, mobile site, outreach and house to house)

- a. Did the campaign use one delivery strategy or multiple? Did this differ across the country, depending on population density, geography, security threat, etc.?
- b. For fixed-site campaigns, please describe the layout of the vaccination sites.
- c. Did this layout differ from a standard site because of COVID-19? If so, please describe.
- d. Were any of the following steps taken to mitigate against VPD and COVID-19 transmission? Examples of mitigating measures include, but are not limited to the following:
 - i. Increasing duration (days) of the campaign to reduce number of people at a site at any one time
 - ii. Increasing number of sites to reduce number of people vaccinated per site

- iii. Increasing size of vaccination teams to support with crowd control
- iv. Increasing number of teams, to reduce daily targets
- v. Decentralizing vaccination sites, using empty public or private premises
- vi. Using outdoor spaces to support physical distancing
- vii. Establishing exclusive vaccination sessions for people with pre-existing medical conditions
- e. For mobile-site, house-to-house and outreach campaigns, please describe how this was implemented. How many vaccination teams were required? What were the challenges? What were the benefits of this approach?
- f. Was the campaign strategy always to use mobile, house-to-house/outreach, or was this implemented because of COVID-19?
- g. For house-to-house campaigns, on average how many houses were reached by each vaccination team per day?

9. Water, Sanitation and Hygiene (WASH) management

- a. For fixed-site campaigns, what WASH measures were put in place for staff and those attending the vaccination site?
 - b. For fixed-site campaigns, was drinking water provided for staff and those attending? Was water provided for handwashing?
 - c. For all sites and house to house, was hand hygiene enforced, and if so, how?
 - d. What cleaning and disinfection procedures were put in place at the vaccine facility, storage facility or for house-to-house teams?
 - e. How was the disposal of syringes and health care waste managed?
 - f. Were any changes made to WASH processes and standards because of COVID-19? Please describe.

10. Funding and financial management

- a. Did the campaign face additional costs owing to COVID-19? How were these calculated? How were they covered?
- b. How was the campaign funded?
- c. Were any innovative or “out-of-the-box” approaches used to support with campaign funding?
- d. Were there any funding challenges that you attribute to the impact of COVID-19? Or limitations/restrictions because of funding? If so, how were these addressed?
- e. Did you experience any cash flow challenges that you attribute to the impact of COVID-19?
- f. Were any changes made to the process of per-diem payments, to limit close interaction between staff?

11. Community engagement and social mobilization

- a. How did you engage with the community ahead of the vaccination campaign (media broadcasts, social media, posters, religious leaders, etc)? What steps did you take to build trust and ensure strong public demand for the vaccine?
- b. How did you identify barriers to access? What steps did you take to minimize barriers?
- c. Were national or subnational immunization days (NID/SNID) implemented?
- d. What type of communication practices or materials were used? Please describe. Were materials translated?
- e. How did the communication plan and materials differ for this campaign, compared with other campaigns, because of COVID-19?
- f. What challenges did the campaign face in trying to engage the community and how were they overcome?
- g. Were you aware of any negative or harmful rumours circulating regarding use of vaccines? If yes, what were the rumours? Did they relate to COVID-19? How were they addressed?
- h. What were the key successes in engaging the community?
- i. Was any creative or innovative messaging used?
- j. Was the effectiveness of messaging and materials evaluated? If so, what were the findings?

12. Routine immunization

- a. Was routine immunization still being offered in country before or during the campaign?
- b. If yes, were any measures in place to mitigate against the risk of COVID-19 (e.g., physical distancing, PPE requirements)? Please describe these.
- c. Were any changes made to routine immunization services to enable delivery within the context of COVID-19 (e.g., increasing outreach sessions)? If so, please briefly describe. If not, what was the reason for not doing so?

13. Programme integration

- a. Was the vaccine campaign integrated with or used to strengthen primary health care services in any way? If yes, was this always the intention, or added in response to COVID-19? Please briefly describe.
- b. Were any activities undertaken during the campaign to identify zero-dose children or zero-dose communities? If yes, please briefly describe. Have any follow-up actions been implemented or planned to reach those identified?

14. Partnerships

- a. Is your country supported by Gavi, the Vaccine Alliance, in any way (e.g., with health system strengthening, vaccine support, cold-chain optimization or technical assistance or other support)?
- b. Did Gavi provide support with this campaign? If yes, please describe how. If not, was there a reason why?
- c. How did you engage or coordinate with the health cluster (if the cluster mechanism is activated in your country)?
- d. Did any partners support the planning or implementation of the campaign? If so, please provide details. If not, was this approach considered?

15. Monitoring and evaluation

- a. Were supervision and monitoring mechanisms put in place throughout the campaign?
- b. Was Rapid Convenience Monitoring (RCM) conducted during the campaign to identify any missed children/target population? If so, please describe this. Were any changes made to this process because of COVID-19?
- c. Were any adverse events following immunization (AEFI) reported?
- d. Was a post-campaign coverage survey conducted? If so, how was this modified owing to COVID-19?
- e. Was an evaluation of the campaign conducted? If so, please describe any key findings.
- f. Are there plans for any follow-up or catch-up campaigns within the same region?
- g. Are there any other key successes that you would like to mention?
- h. Are there any other moments of innovation or creativity that you would like to mention?
- i. What would you have done differently in preparation for and during the campaign?
- j. What would you have done the same in preparation for and during the campaign?
- k. What advice or recommendation would you give to other countries preparing for a vaccination campaign?

Appendix 2: List of persons interviewed

Angola

Medard Folefack Temfack, Immunization Specialist, UNICEF

Bangladesh

Jucy Merina Adhikari, Health Specialist, UNICEF

Zahid Hassan, Health Officer, UNICEF

Jahid Shahed, Health Officer, UNICEF

Mohammad Badrul Hassan, Communication for Development Specialist, UNICEF

S.M Hasanuzzaman, Public Health Specialist, Consultant, UNICEF

India

Bhriгу Kapuria- Immunization Specialist, UNICEF

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Mokhtar Ali, Emergency Officer, UNICEF

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Aiman Hadi, EPI Officer, WHO

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Appendix 3: Resources

Resources and guidelines by UNICEF and partner organizations

UNICEF

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