ROUTINE IMMUNIZATION SCHEDULES FINAL PRESENTATION

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PROJECT TEAM MEMBERS



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START OVERVIEW



Leverages leading content expertise from across the University of Washington.



Provides high quality research and analytic support to the Bill & Melinda Gates Foundation and global and public health decision-makers.



Provides structured mentorship and training to University of Washington graduate research assistants.



PROJECT OVERVIEW

This project explores routine immunization schedule optimization, focusing on the introduction of a 6-month well-child visit as a platform to:

- 1. Deliver novel vaccines,
- 2. Increase health system touchpoints in the first year of life,
- 3. Integrate other child health interventions.



KEY PROJECT OBJECTIVES



Assess the feasibility and policy support of introducing or strengthening a 6-month well child visit in Gavi-supported countries.



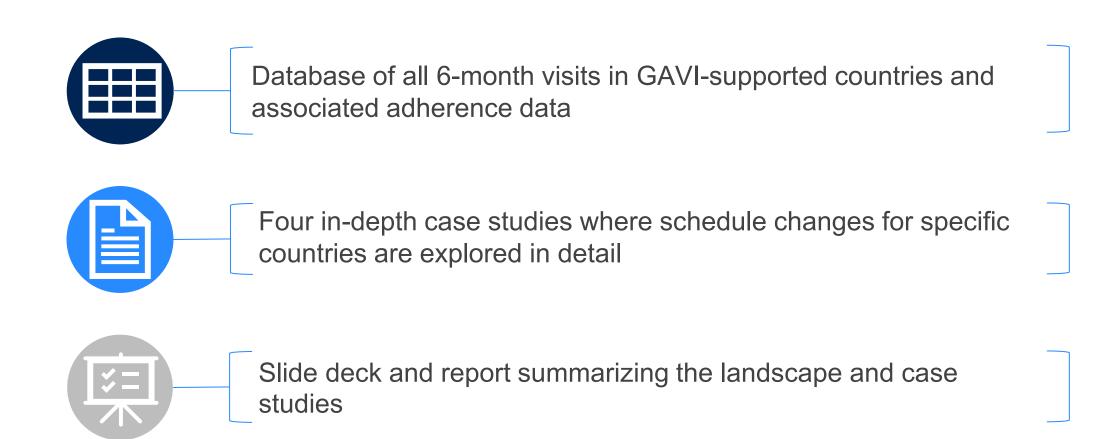
Examine country experiences with schedule changes to identify challenges, impact on coverage, and lessons learned for implementation.



Identify opportunities to use a 6-month visit as an integrated delivery platform for immunizations and other child health interventions.



FINAL DELIVERABLES





GUIDING QUESTION

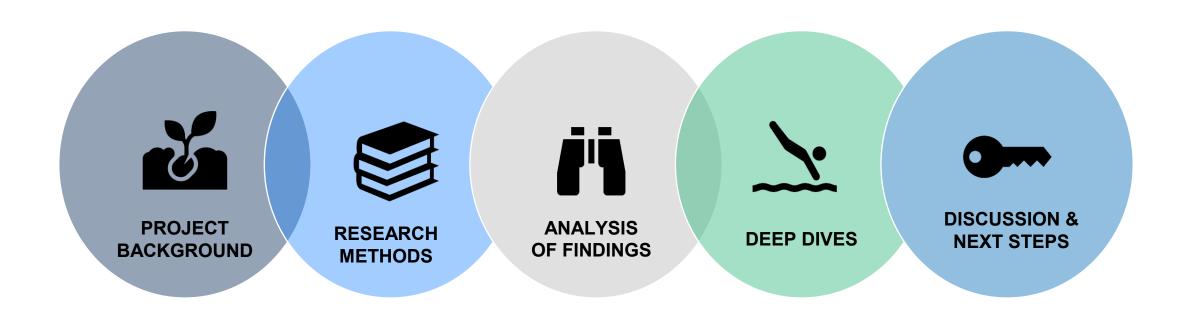
?

How prepared are Gavi-supported countries to introduce and sustain 6-month well-child visits as a platform to deliver new products?



PRESENTATION OVERVIEW

HIGHLIGHT FINDINGS TO FACILITATE DISCUSSIONS FOR FUTURE VACCINE INTRODUCTIONS AND INTEGRATED INTERVENTION DELIVERY



BACKGROUND

EXPLORING THE ROLE OF A 6-MONTH VISIT

- Infant vaccine visits from the expanded program on immunization (EPI) schedules are concentrated in early infancy.
- Most EPI schedules have a gap between 14-weeks and 9-months.
- Newly licensed vaccines (such as RTS,S for malaria) and in development vaccines (such as Shigella) may require 6-month visits.

Example EPI schedule (Pakistan)

AGE	VACCINES	
Birth	BCG; OPV-0; HEP-B	
6 Weeks	OPV-1; Pneumococcal-1; Rotavirus- 1; Pentavalent-1	
10 Weeks	OPV-2; Pneumococcal-2; Rotavirus- 2; Pentavalent-2	
14 Weeks	OPV-3; IPV-1; Pneumococcal-3; Pentavalent-3	
9 Months	MR-1; Typhoid; IPV-2	
15 Months	MR-2	



BACKGROUND

EXPLORING THE ROLE OF A 6-MONTH VISIT

In 2023, WHO endorsed a 6-month well-child visit for:

- growth monitoring
- developmental milestones
- immunization check/catch-up
- caregiver support
- feeding practices

Unclear which countries have introduced 6-month visit, what visit adherence looks like, and what implementation challenges exist.

Table 1. Proposed schedule for well-care visits to support children and adolescents

Schedule	Preconception	Antenatal	Neonatal	Infancy	Early childhood	Later childhood
Preconception	*					
Antenatal		♦				
24 h (to discharge)			•			
1 week			•			
2 weeks			•			
6 weeks				•		
10 weeks				•		
14 weeks				♦		
6 months				*		
				•		

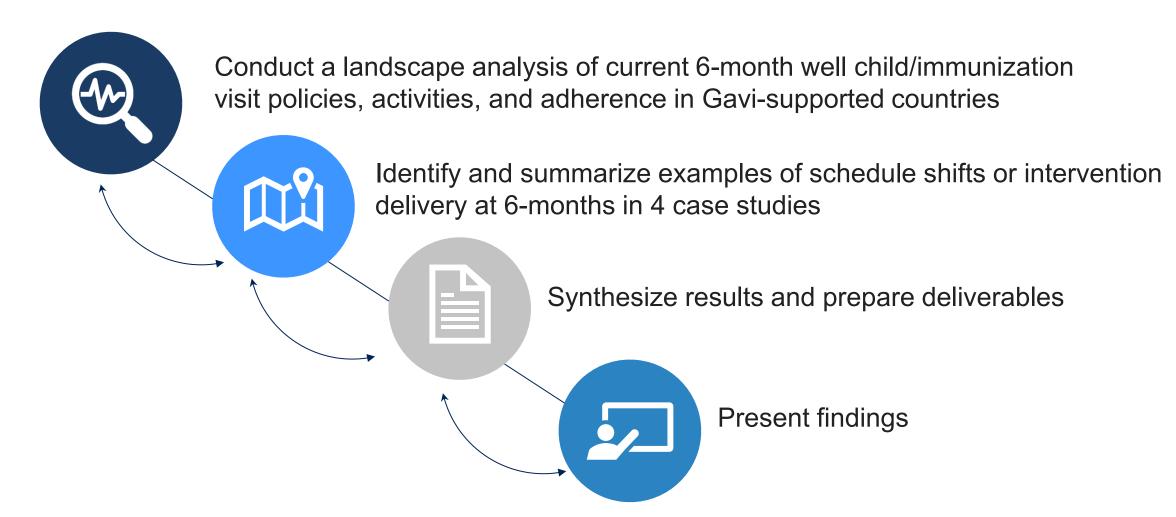
Source: WHO, Improving the health and wellbeing of children and adolescents: guidance on scheduled child and adolescent well-care visits (2023)



METHODS



PROJECT PROCESS





LANDSCAPE PROCESS

POLICY SUPPORT & ADHERENCE

Policy Support

Activities at the Visit

Adherence in Practice

Timing of Introduction

Establish whether a 6month visit is formally included in national or subnational immunization or child health policies.

Identify what vaccines, activities, or health interventions are scheduled at the 6-month contact

Explore what is known about real-world delivery and uptake of activities at the 6-month visit.

Determine when the 6month visit or associated interventions were added to the schedule.

Commonly used data sources: WHO Immunization Database, national policy documents/reports, published literature, grey literature (i.e., press releases)



LANDSCAPE MATRIX ABSTRACT INFORMATION

Name of the country		
WHO region	Enter WHO region	
Gavi status	Gavi classification (e.g., transition, self-financing)	
6-Month Visit in Schedule? (Y/N)	Are there recommendations for a formal visit at 6 months?	
Activities at 6 months	List of activities scheduled at 6 months (e.g., RTS,S, Vit A, growth) separate rows for each intervention	
Vaccine-specific details	Include relevant vaccine (e.g., RTS,S, MCV1, Rota booster)	
Policy source Title and link to national policy, schedule, or guideline		
Source year	Year of the policy/guidance document	
Source type Type of document (e.g., EPI schedule, child health plan, grey literature)		
Adherence data available? (Y/N)	Is there data on uptake/coverage of 6-month visit or any 6-month intervention?	
Adherence measure type	What metric is reported (e.g., RTS,S dose 2 coverage, Vitamin A coverage)	
Adherence measure	% coverage or qualitative info	
Adherence year	What year was the adherence data collected	
Adherence data source	Name or link to data source (e.g., DHS, WHO, pilot report)	
Implementation notes Challenges related to the implementation of the 6-month visit or specific interventions at		
Visit introduction timing	Year when the 6-month visit or specific intervention was officially introduced into policy/guidelines	



CASE STUDY APPROACH



Draw on findings from the landscape matrix



Prioritize countries with strong data, recent changes, or unique challenges



If possible, hold interviews with subject matter experts in vaccine implementation



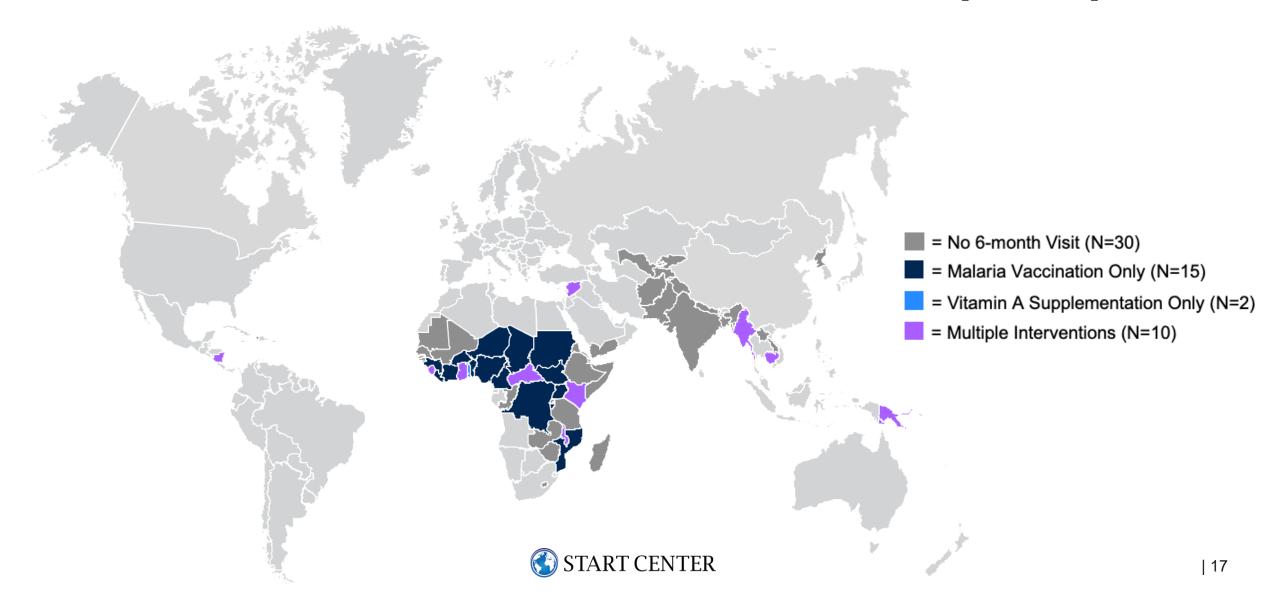
Conduct a targeted literature search for implementation and qualitative insights



6-MONTH VISIT FINDINGS



INTERVENTIONS OFFERED AT 6-MONTHS BY GAVI-SUPPORTED COUNTRIES (N=57)



OVERVIEW OF 6-MONTH INTERVENTIONS



KEY TAKEAWAY: Among the 57 countries explored, **27 countries (47%) have a dedicated 6-month visit** offering routine vaccination, Vitamin A supplementation, growth monitoring and/or routine wellness screening, or a combination of interventions.

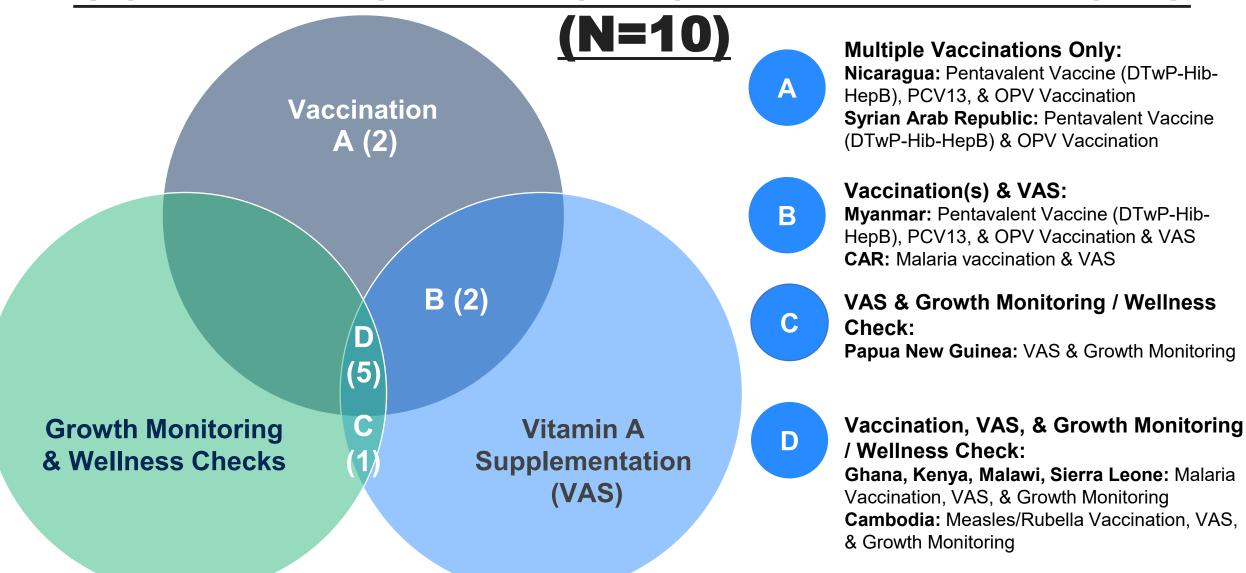
Interventions	Countries [^]	
Malaria Vaccination (N=20)	Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Côte d'Ivoire, Democratic Republic of the Congo, Ghana, Guinea, Kenya, Liberia, Malawi, Mozambique, Niger, Nigeria, Sierra Leone, South Sudan, Sudan, Uganda	
Vitamin A Supplementation (VAS; N=10)*	Cambodia, Central African Republic, Comoros , Ghana, Kenya, Malawi, Myanmar, Papua New Guinea, Sierra Leone, Togo	
Growth Monitoring (N=6)	Cambodia, Ghana, Kenya, Malawi, Papua New Guinea, Sierra Leone	
Other Routine Vaccinations (N=4)	Cambodia (Measles/Rubella), Myanmar (DTwP-Hib-HepB; PCV13; OPV), Nicaragua (DTwP-Hib-HepB; PCV13; OPV), Syrian Arab Republic (DTwP-Hib-HepB; OPV)	
No Intervention (N=30)	Afghanistan, Bangladesh, Congo, Democratic Republic of North Korea, Djibouti, Eritrea, Ethiopia, The Gambia, Guinea-Bissau, Haiti, India, Kyrgyz Republic, Lao PDR, Lesotho, Madagascar, Mali, Mauritania, Nepal, Pakistan, Rwanda, Sao Tome and Principe, Senegal, Solomon Islands, Somalia, Tajikistan, UR Tanzania, Uzbekistan, Yemen, Zambia, Zimbabwe	

[^]Countries may be represented more than once if offer a combination of interventions at 6 months

^{*}Additional countries recommend VAS for children age 6-59 months but deliver predominantly through campaigns or other methods outside routine well child visits.



CO-ADMINISTRATION OF INTERVENTIONS



ADHERENCE DATA AVAILABILITY



KEY TAKEAWAY: Currently, **only 13 (48%) of countries with a 6-month visit report any adherence data**: 10 on malaria vaccination, 2 on DTP-containing vaccines, 2 on pneumococcal vaccination, 1 on oral poliovirus vaccination, and 1 on postnatal care.

Country	Intervention	Adherence Data ^A
Benin	Malaria Vaccine (Dose 1)	90% (2024)
Cameroon	Malaria Vaccine (Dose 1)	65% (2024)
Central African Republic	Malaria Vaccine (Dose 1)	28% (2024)
Chad	Malaria Vaccine (Dose 1)	27% (2024)
Côte d'Ivoire	Malaria Vaccine (Dose 1)	93% (2024)
Ghana	Malaria Vaccine (Dose 1)	65 (2024)
Kenya	 Malaria Vaccine (Dose 1) Postnatal care interventions at 4–6-month postpartum in Kakamega County ^B 	1.) 80% (2024) 2.) 50% (Date Unavailable)
Malawi	Malaria Vaccine (Dose 2) ^C	68%
Mozambique	Malaria Vaccine (Dose 1)	55% (2024)
Niger	Malaria Vaccine (Dose 1)	24% (2024)



^c From Asante KP et al. 2024. Feasibility, safety, and impact of the RTS,S/AS01E malaria vaccine when implemented through national immunisation programmes: evaluation of cluster-randomised introduction of the vaccine in Ghana, Kenya, and Malawi. Lancet. 2024 Apr 27;403(10437):1660-1670. doi: 10.1016/S0140-6736(24)00004-7. Epub 2024 Apr 4. PMID: 38583454



A Only includes countries with data specific to a 6-month visit, excluding coverage estimates for all 6-59-month-olds, etc.

From Targeted Postnatal Care Implementation for Mothers in Selected Health Facilities in Western Kenya. (2025). Evidence-Based Nursing Research, 7(2), 32-39. https://doi.org/10.47104/ebnrojs3.v7i2.386

ADHERENCE DATA AVAILABILITY



Country	Intervention	Adherence Data ^A
Myanmar	1.) DTP-containing Vaccine (Dose 3)2.) PCV-13 Vaccine (Dose 3)3.) OPV Vaccine (Dose 3)	1.) 71% (2024) 2.) 71% (2024) 3.) 71% (2024)
Syrian Arab Republic	DTP-containing Vaccine (Dose 3)	79% (2024)



Country	Intervention	Adherence Data ^A
Nicaragua	PCV-13 Vaccination (Dose 3)	95% (2024)

A Only includes countries with data specific to a 6-month visit, excluding coverage estimates for all 6-59-month-olds, etc.



MALARIA VACCINATION INTRODUCTION

6-month Visit

Previous

2



6-month Visit

Previous

KEY TAKEAWAY: Among the 20 countries introducing malaria vaccination, the majority (75%) did not have a previously scheduled 6-month visit, making the vaccine a novel entry point for care.





CHALLENGES WITH 6-MONTH VISIT IMPLEMENTATION



System and Logistics Constraints

- Managing storage for new vaccines or supplements can be complicated, especially in resource-limited settings
- Challenges in tracking coverage and follow-up arise, as multiple touch points (campaigns, routine visits) can lead to missed doses or incomplete record keeping



Data and Monitoring Challenges

 Coverage and adherence data for new touchpoints are often lacking or incomplete, especially for non-vaccine interventions, making it difficult to measure impact and adjust strategies



CHALLENGES WITH 6-MONTH VISIT IMPLEMENTATION



Caregiver and Community Factors

- Low community awareness and knowledge about the new intervention, schedule, or its benefits can reduce uptake – especially in areas with low literacy rates or limited access to accurate information
- Mothers/caregivers may find it difficult to make frequent or age-specific visits due to distance, cost, or conflicting schedules
- Trust in health systems and in new vaccines/interventions can affect willingness to attend visits or complete multi-dose schedules
- Conflicts, outbreaks, and fragile health workforce capacity can disrupt introduction and scale-up of new visits



SUCCESSFUL 6-MONTH VISIT STRATEGIES

RAISING AWARENESS

- Communication campaigns targeting caregivers
- Messaging in local dialects & community leader involvement
- Leveraging local communication channels

MONITORING & DIGITAL TOOLS

- Close monitoring of rollout performance
- Digital reminder recall systems for caregivers
- Feedback loops for program strengthening recommendations

PARTNER SUPPORT

- Co-develop vaccine implementation plans
- Health worker training
- Strengthen cold chain and routine immunization infrastructure



CASE STUDY DEEP DIVES

GHANA

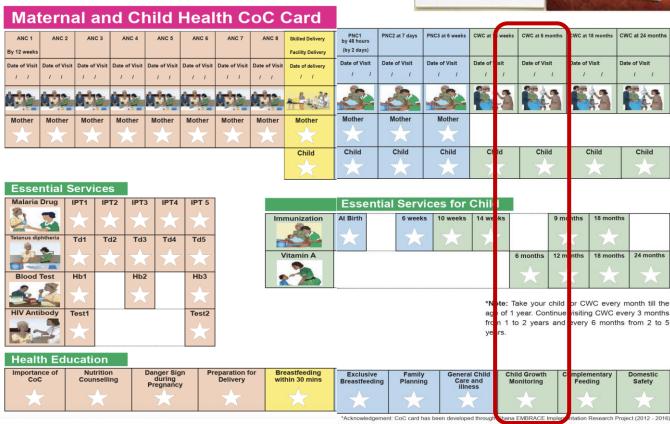
TRANSITION FROM PILOT TO ROLLOUT





Maternal and Child Health Record Book (Launched March 2018)

- Home-based health record to promote health and nutrition and improve the continuum of care (CoC) for mothers and their children.
- Recommends a Child Well Center visit every month until the 1 year of age.
- Vitamin A, growth monitoring, and nutrition counseling are all included in the 6-month visit.
- While studies have assessed the effectiveness of the MCH RB and the CoC card, findings are not specific to the 6-month visit.



Source: Ghana Ministry of Health/Ghana Health Service, User Guide For Maternal And Child Health Record Book (September 2021)



GHANA

TRANSITION FROM PILOT TO ROLLOUT



Malaria vaccine (2019-present; part of the current EPI schedule)

- First delivered sub-nationally to 42 out of 261 districts in 2019 as part of the RTS,S pilot study.
- RTS,S expansion to another 51 districts in February 2023.
- Roll-out of R21 in 43 districts in September 2024. Plan to reach remaining districts between 2025 and 2029.
- Facilitators/barriers documented during pilot implementation and those anticipated for scale-up:
 - Facilitators: disease burden, effectiveness of the malaria vaccine, stakeholder involvement, evidence for feasibility of vaccine delivery
 - Barriers: logistics (i.e., cold chain set up), funding/resources



	Year	1st dose coverage (delivered at 6-mo)		
	2020	71% (pilot reported coverage)		
	2021	76% (pilot reported coverage)		
	2022	_		
2023 85.74% (85.74% (WHO, admin coverage)		
	2024	65.18% (WHO, admin coverage)		

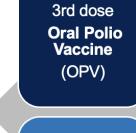
Sources:

MYANMAR

INTEGRATED VACCINATION & VITAMIN A SUPPLEMENTS AT 6-MONTH VISITS

M

Early Adopter: Myanmar began offering vaccines at 6-month well-child visits in some districts in 2022, before WHO's 2023 endorsement.



3rd dose
Pneumococcal
Vaccine
(PCV-13)

3rd dose
Pentavalent
Vaccine
(DTwP-HibHepB)

1st dose Vitamin A Supplement



A Model of Integrated Delivery: Myanmar currently delivers four interventions targeting eight diseases at 6-month well-child visits.

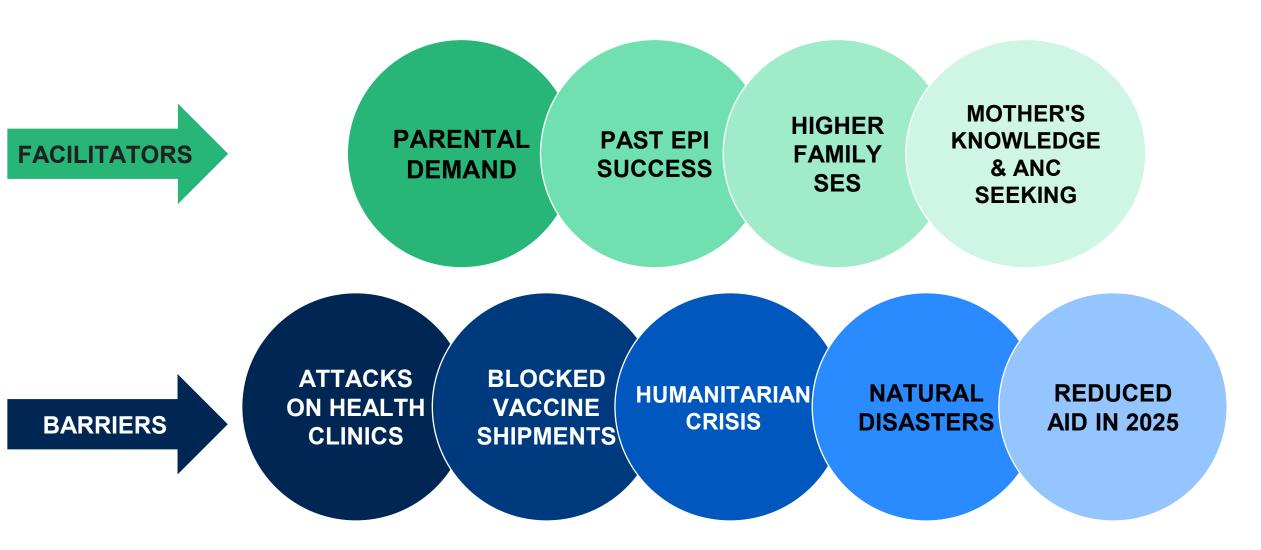


Impact of 6-Month Visits Unclear: Myanmar has made remarkable vaccine coverage recovery since 2021, despite major challenges, but the contribution of 6-month visits to these gains remains uncertain.



MYANMAR

FACILITATORS & BARRIERS FOR VACCINATION*





Dr. Tajul Bari: served as the EPI Manager for Bangladesh from 1998 – 2016 and oversaw the introduction of many new vaccines into Bangladesh's EPI, including PCV in 2015

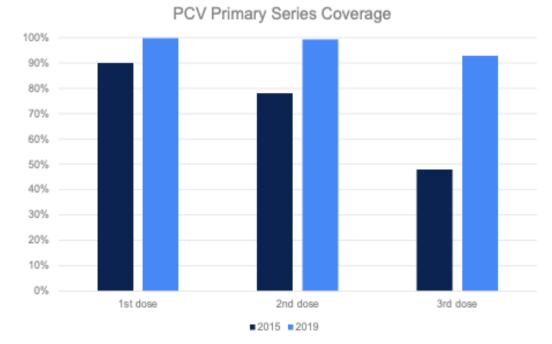


BANGLADESH

PCV SCHEDULE CHANGE: BACKGROUND

- 2015: PCV introduced at 6, 10, 18 weeks
- 18-week visit created to avoid 3 injectables at 14 weeks
- New touchpoint proved unsustainable and PCV dose 3 was switched to 14 weeks by 2017

Week	Before 2015	2015-2017	2017-Present
6	OPV1; PENTA1	OPV1; PENTA1; PCV1	OPV1; PENTA1; PCV1; fIPV1
10	OPV2; PENTA2	OPV2; PENTA2; PCV2	OPV2; PENTA2; PCV2
14	OPV3; PENTA3	OPV3; PENTA3; IPV	OPV3; PENTA3; PCV dose 3; fIPV2
18	18 -		-





BANGLADESH

PCV SCHEDULE CHANGE: IMPLEMENTATION INSIGHTS

Challenges

- High dropout of PCV dose 3 was the primary driver for the shift
 - Lack of awareness among caregivers
- Workforce shortages
- Operational costs

Adherence Impact

- PCV dose 3 at 18
 weeks had ~10%
 higher dropout vs
 other 14-week
 vaccines
- Shift greatly improved coverage
- Dr. Bari: change is sustainable, no dropout concerns

Lessons Learned

- Bangladesh is prioritizing introducing new vaccines to existing visits
 - Avoiding additional touchpoints due to challenges
- 3 injections at one visit is the status quo



SOUTH AFRICA

MCV SERIES SHIFT: EXPERT INSIGHT



Dr. Rudzani Muloiwa: Head of Pediatrics at Red Cross Children's Hospital, the deputy chair of NAGI, and the Co director of Vaccines for Africa

Dr. Haroon Saloojee: NAGI member, neonatologist and community pediatrician at the WITS school of medicine





SOUTH AFRICA

MCV SERIES SHIFT: RATIONALE



Standalone Measles Delivery: South Africa prioritized administering a measles-only vaccine



"Forced Switch": South Africa's previous supplier stopped making a standalone measles vaccine. The replacement (MeasBio) was not approved by the South African Health Products Regulatory Authority for co-administration.

The 9-month slot already administered PCV dose 3, so MCV was repositioned to 6 & 12 months, **introducing two new visits**.



Operational vs. Epidemiological Rationale: The literature attributes the switch to the 2009-2011 measles outbreak affecting children < 9 months. However, experts emphasized the logistic and regulatory factors as the true driver of the shift.

Age	Vaccine
Birth	BCG; OPV0
6 Weeks	RV; Hexa1; PCV dose 1
10 weeks	Hexa2
14 weeks	RV2; Hexa3; PCV dose 2
6 months	MCV1
9 months	PCV dose 3
12 months	MCV2



SOUTH AFRICA

MCV SERIES SHIFT: EPIDEMIOLOGIC IMPACT

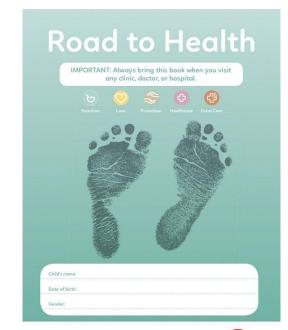
KEY TAKEAWAY: Patterns in measles outbreaks are most consistent with underimmunization

Post-2016: Low antibody titers and recurrent outbreaks are the result of underimmunization but could be complicated by vaccine change, schedule change, HIV epidemic, and smaller cohort of natural immunity.

Age pattern unclear: Experts suspect a shift to older children, but confirmatory data are sparse.

DRIVERS OF UNDER-IMMUNIZATION

- Missed opportunities for vaccination at sick visits
- Road to Health booklet often not checked during sick visits
- Stockouts of vaccines
- COVID disruptions and increased vaccine hesitancy







SOUTH AFRICA

MCV SERIES SHIFT: LOOKING FORWARD

KEY TAKEAWAY: South Africa is keeping the revised MCV schedule to ensure children have reliable contact points with the health system

- Leverage the costly delivery system. The highest cost of implementing a vaccine is in the infrastructure; using visits for multiple services improves value and impact
- More visits vs. more shots per visit. Pediatricians in South Africa are in support of extra touchpoints that involve vaccines since they are key drivers of well-child visit adherence and opportunity to do a wellness check of the child

CONTINUED LEARNING OPPORTUNITIES

SME Interview

Dr. Saira Nawaz: Project Director for the Routine Immunization Strengthening Program (RISP) Learning Consortium at PATH. She also supports the Gavi's Malaria Vaccine Programme Learning Agenda.



CONTINUED LEARNING OPPORTUNITIES

GAVI'S MALARIA VACCINE PROGRAMME LEARNING AGENDA

Purpose: Conduct implementation research focused on integrating malaria vaccine delivery with existing child health services to improve uptake of the complete four-dose schedule.

Approach: Four learning partners, each covering different geographies (ex. PATH: Burkina Faso, Mozambique). Each partner is testing different strategies of integration to boost demand.

Key aims:

- Leverage malaria vaccine visits to facilitate delivery of other child health services (e.g., missed routine vaccinations, nutrition support).
- Integrate malaria vaccine delivery into regular immunization, primary health services, and community health touchpoints (such as during malaria prevention or surveillance visits).

Timeline: Project currently ends Dec 2025. Early outputs expected soon.

For more information about the project, please contact Saira Nawaz, snawaz@path.org.



CONTINUED LEARNING OPPORTUNITIES

ROUTINE IMMUNIZATION STRENGTHENING PROGRAM (RISP) LEARNING CONSORTIUM

Purpose: strengthen routine immunization (RI) in conflict-affected and under-immunized areas by generating and disseminating data-driven learnings on how RI programs operate, what barriers they face, and what solutions work—or don't.

Geographies: Pakistan, Afghanistan, Chad, CAR, DRC, Guinea, Niger, Somalia, South Sudan, Syria

Learnings so far & connections to our work:

- Coverage improves most when fixed-site delivery is reinforced, not when new "one-off" campaigns are created.
- Stronger RI enables sustainable uptake of multiple products (such as the malaria vaccine).
- Ensuring financing for health systems strengthening activities in general will improve uptake of all interventions integrated into routine health services.
- Countries where RISP partners with the government (i.e., DRC and Chad) will provide early insights on integration of the malaria vaccine through routine immunization visits in countries with weaker health infrastructure.

Timeline: March 2024 – December 2027. Continuous reporting and sharing of country-level learnings.

For more information about the <u>project</u>, please contact Saira Nawaz, snawaz@path.org.



KEY TAKEAWAYS



KEY TAKEAWAYS



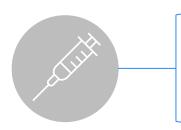
6-Month visit adoption: Roughly half of Gavi-supported countries (27 of 57) have adopted a formal 6-month well-child visit, often used for vaccines, Vitamin A supplementation, and growth monitoring.



Integration opportunities: The visit offers a **promising platform** for bundled services (e.g., Ghana, Sierra Leone, Myanmar), though evidence remains **highly context-specific**.



KEY TAKEAWAYS



Malaria vaccine as a driver: In 75% of countries introducing malaria vaccination, the 6-month visit was newly created, making it a critical entry point for health system engagement. Findings from the Gavi project will provide more evidence on integration methods that work well in different contexts.



Logistical & resourcing concerns: Evidence shows that logistics and resourcing (i.e., financial and workforce capacity) are key barriers to both implementation of a new visit and strengthening existing visits.



Mixed support for new visit from experts: One voiced that additional visits are preferred instead of adding more antigens into a single visit, because each visit is an opportunity to detect other health problems (developmental delays, malnutrition, etc.). Others note that success depends on a strong routine immunization system, adequate resources, and high attendance for existing visits.



COUNTRY-LEVEL LESSONS



Bangladesh — Adding a new visit at 18 weeks proved unsustainable, limited by caregiver awareness and staffing constraints.



South Africa — The shift to 6- and 12-month measles doses was a forced change driven by supply and regulatory constraints, showing schedules may adapt to logistics rather than epidemiology.



Myanmar — Despite humanitarian crises, achieved integrated delivery at 6 months (growth monitoring, vitamin A, deworming, and immunization).



Ghana — Used the 6-month visit to scale malaria vaccine delivery from pilot to phased national rollout.



LIMITATIONS

Data gaps

- Adherence and coverage data are limited, especially for nonvaccine services (Vitamin A, growth monitoring).
- Multiple delivery channels (routine visits, campaigns, CHWs) make it hard to link data to 6-month visit attendance.

Limited early evidence

- Malaria vaccine rollouts are recent, so long-term adherence and impact remain unclear.
- Existing data often use incomplete or inconsistent denominators, limiting crosscountry comparisons.

CONCLUSION



Our findings outline the **current landscape of 6-month visits**, **recent introduction** of new visits to deliver the malaria vaccines, and **experiences integrating** multiple interventions at well child visits.



However, additional time and research are needed to adequately assess the feasibility and effectiveness of implementing a new 6-month visit.



As malaria vaccine implementation continues, **implementation experiences** in a variety of contexts will provide important evidence on the **feasibility and acceptability** of establishing a new 6-month visit for integrated delivery of child health interventions.

DISCUSSION



THANK YOU



EXPERT SOURCES

- **Dr. Tajul Bari:** Manager of the Bangladesh EPI 1998-2016
- Dr. Rudzani Muloiwa: Head of Pediatrics at Red Cross Children's Hospital Cape Town, the deputy chair of NAGI, and the Co-director of Vaccines for Africa
- Dr. Haroon Saloojee: NAGI member, neonatologist and community pediatrician at the WITS school of medicine Johanessburg
- Dr. Selorm Kutsoati: Manager of the Ghana EPI
- Dr. Mohammed Naziru: Deputy Manager of the Ghana EPI
- Saira Nawaz: Project Director for the Routine Immunization
 Strengthening Program (RISP) Learning Consortium at PATH and supporter of Gavi's Malaria Vaccine Programme Learning Agenda.



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