

WEBINAR

Maximizing malaria vaccine visits within routine immunization platforms

Early insights and opportunities from Gavi's Malaria Vaccine Learning Agenda



AGENDA

- Introduction and overview of the Gavi Malaria Vaccine Learning Agenda
- Presentation by Dr. Ali Sie
- Presentation by Dr. Daan Velthausz
- Q&A



Malaria Vaccine Learning Agenda

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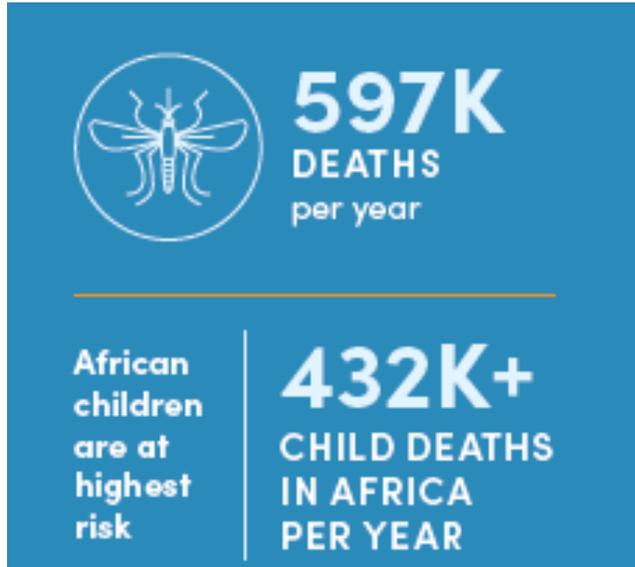
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gavi.org



Malaria Vaccines



Malaria remains a primary cause of childhood morbidity and mortality in Africa

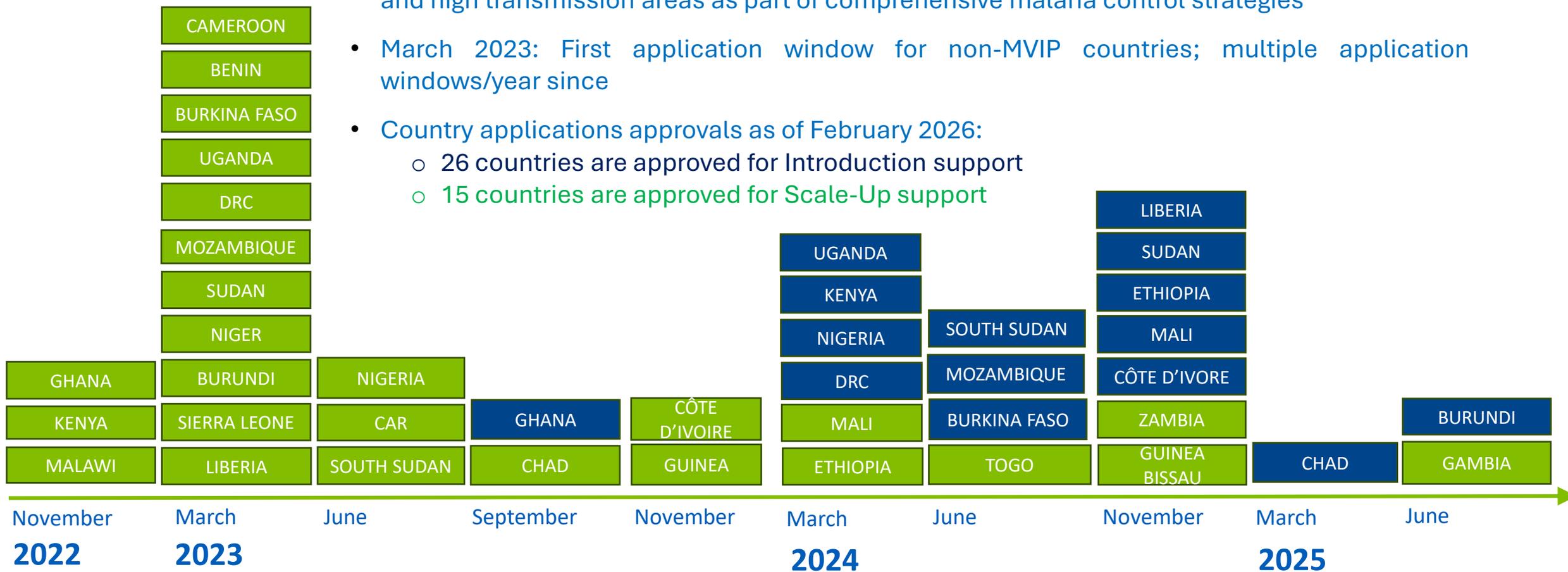
WHO recommends the programmatic use of malaria vaccines for the prevention of *P. falciparum* malaria in children living in malaria endemic areas, prioritizing areas of moderate and high transmission



Malaria vaccines should be provided as part of a comprehensive malaria control strategy

Gavi's Malaria Vaccine Programme

- December 2021: Gavi Board approved support for the Malaria Vaccine Programme in eligible countries for the introduction, scale up, and implementation of malaria vaccines in moderate and high transmission areas as part of comprehensive malaria control strategies
- March 2023: First application window for non-MVIP countries; multiple application windows/year since
- Country applications approvals as of February 2026:
 - 26 countries are approved for Introduction support
 - 15 countries are approved for Scale-Up support



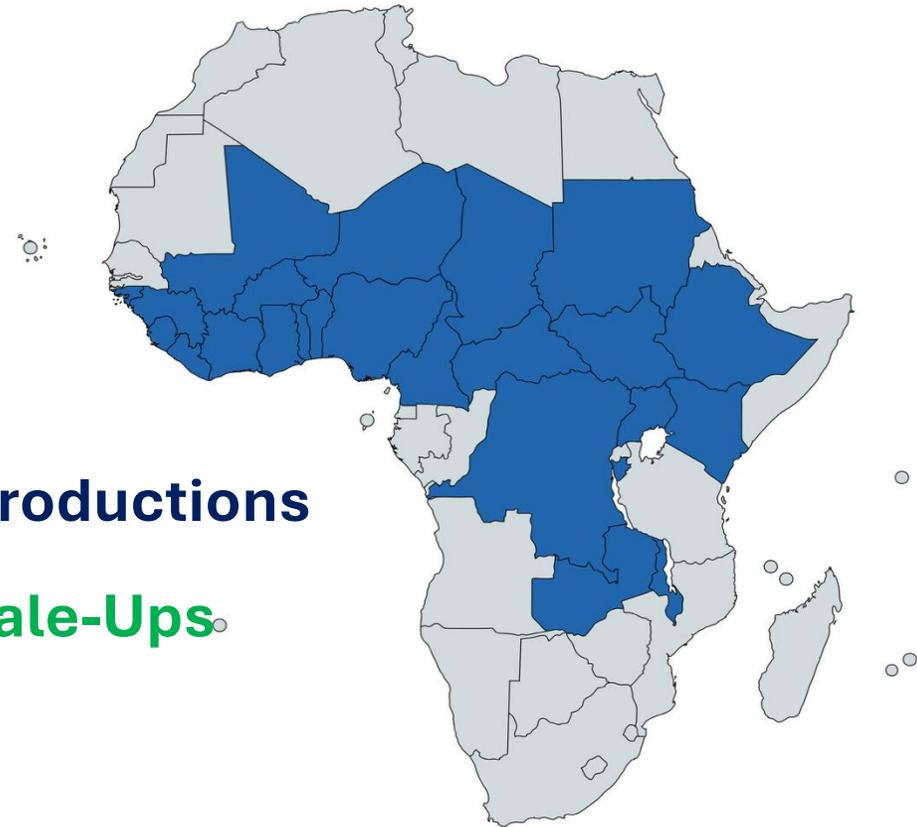
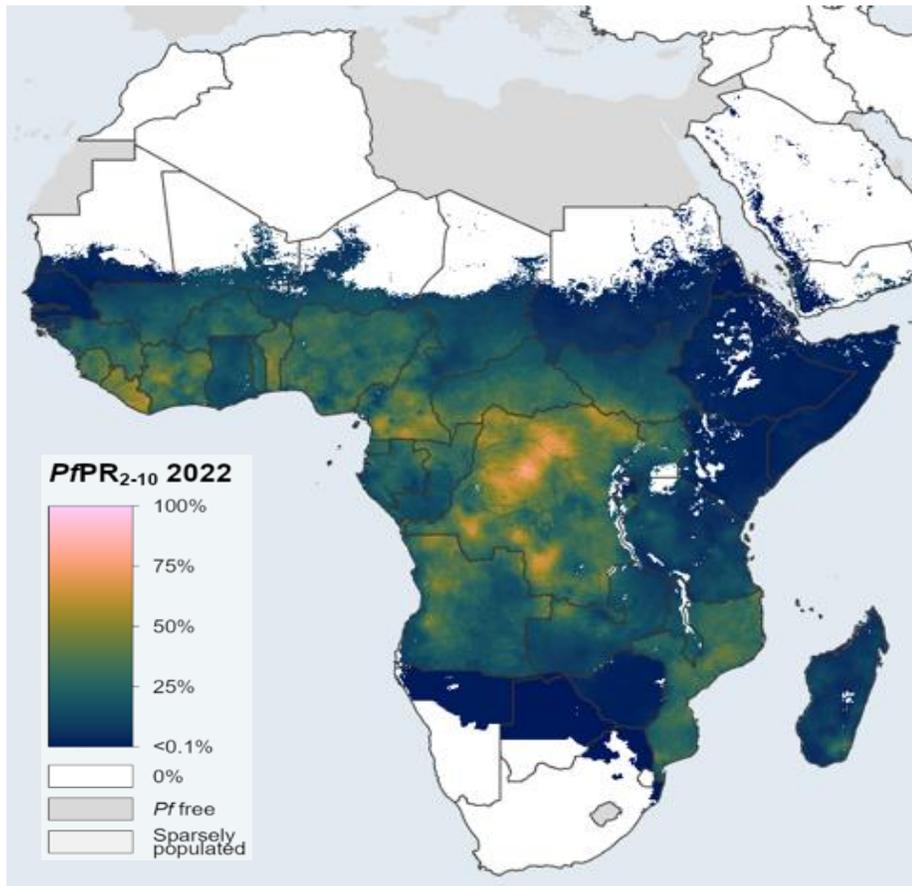
Gavi IRC approval dates

Introduction Application

Scale-up Application

Roll-Out Status as of February 2026

Most countries with areas of moderate and high malaria transmission have introduced malaria vaccines



- **25 Introductions**
- **10 Scale-Ups**

Source: Malaria Atlas Project (map), <https://malariaatlas.org/>

Learning Agenda: Research Aims & Objectives

Research Aim 1

UPTAKE

Identify approaches and interventions to increase the uptake of malaria vaccine and other health interventions during routine visit timepoints/ touchpoints

- **Objective 1:** To identify, investigate and document innovative means to utilize malaria vaccine visits to identify and provide due, late, or missed routine vaccinations, vitamin A, deworming, malaria chemoprevention, facilitate ITN use, and other child health and malaria interventions.
- **Objective 2:** To identify, investigate and document innovative means to improve the uptake of malaria vaccines at other immunization or health system touchpoints (i.e., preventive or curative services provided during scheduled immunization/preventive care visits, well child visits, sick child visits, delivery of seasonal malaria chemoprevention by community health workers, etc.).

Research Aim 2

SEASONALITY

Conduct a comparative assessment on the feasibility and effectiveness of alternative schedules and delivery strategies of malaria vaccines in areas of highly seasonal malaria transmission

- **Objective 1:** Conduct an assessment on the programmatic feasibility and impact on coverage of alternative delivery strategies (seasonal or hybrid schedules) of malaria vaccine in areas with highly seasonal transmission.
- **Objective 2:** Conduct a comparative assessment on the impact, and cost-effectiveness of alternative delivery strategies (seasonal or hybrid schedules) of malaria vaccine in areas with highly seasonal transmission.

Learning Agenda: Research Questions

Research Aim 1: UPTAKE

OBJECTIVE 1

To leverage malaria vaccines to increase uptake of other EPI antigens, health, and malaria interventions

- **Q1 What scalable innovations** (new/additional interventions, approaches, practices) can be implemented during malaria vaccine visits to improve health worker performance **to identify due/late/missed other child and malaria health interventions** (e.g. other vaccinations, growth monitoring & promotion, vitamin A supplementation, deworming, malaria chemoprevention, long-lasting insecticidal net use) to increase their delivery and uptake? **How effective** are the innovations in increasing uptake of other child health interventions?
- **Q2 What are the potential implications of the innovations for health system strengthening** or weakening (e.g. health care provider workload)?

- a. What is the **acceptability** of the innovations by the target and/or affected populations?
- b. What is the **cost** of the innovations?
- c. What is the **feasibility** of sustainable and at scale implementation of the innovations?
- d. What is the **impact** (e.g. change in vaccine coverage) of the innovations on the uptake or coverage of child health interventions?

OBJECTIVE 2

To leverage other EPI antigens, health, and malaria interventions to increase uptake of malaria vaccines

- **Q1 What scalable innovations** can be implemented during childhood immunization or other health system touch points (e.g. well/sick child visits, delivery of seasonal malaria chemoprevention) to improve health worker performance **to identify due/late/missed malaria vaccine doses** and increasing uptake of the primary series (first three doses) and the fourth dose of the malaria vaccine.

MVLA Research Questions

Research Aim 2: SEASONALITY

OBJECTIVE 1

To assess the programmatic feasibility and impact on coverage of alternative delivery strategies (seasonal or hybrid schedules) of malaria vaccine in areas with highly seasonal transmission

1. What is the **operational, financial, and social feasibility** of delivering malaria vaccines using the alternative (seasonal or hybrid) schedule?
 - a. What are the essential **programmatic elements** shaping the feasibility of the alternative schedule?
 - b. What are the direct and indirect **costs** of the alternative (seasonal or hybrid) schedules?
 - c. What **communication strategies and tools** are used with healthcare workers and communities about this schedule?
 - d. How do the measures of feasibility **compare** with other alternative or age-based schedules in comparable settings?
2. What **opportunities and challenges** were identified with the alternative (seasonal or hybrid) schedules?
3. What is the **impact** of the alternative (seasonal or hybrid) schedule on the **uptake, coverage and timeliness** of malaria vaccination?

OBJECTIVE 2

To compare the impact and cost-effectiveness of alternative delivery strategies (seasonal or hybrid schedules) of malaria vaccine in areas with highly seasonal transmission

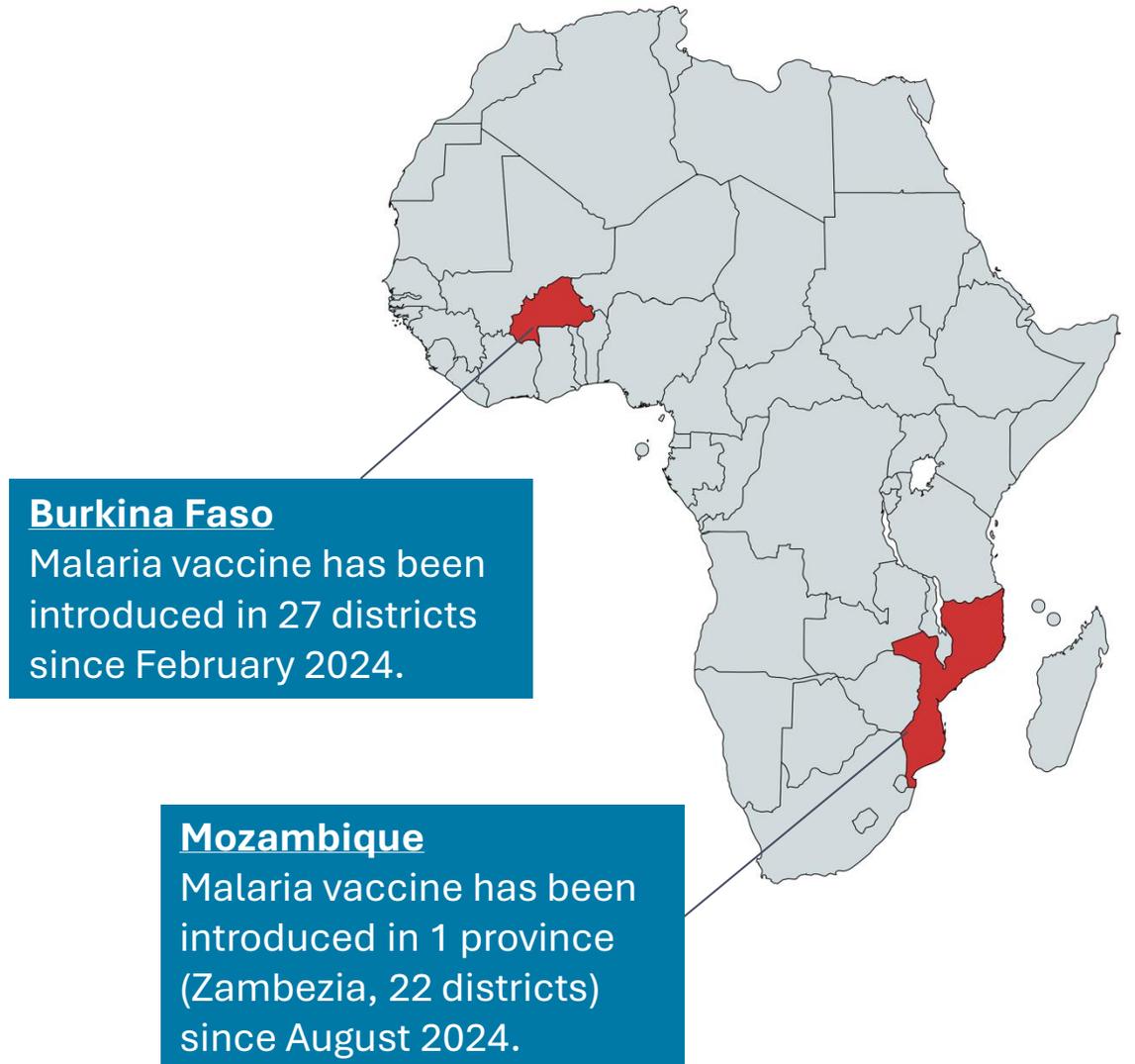
1. How does the **clinical effectiveness** of the alternative (seasonal or hybrid) schedules compare with other alternative or age-based schedules in terms of reduction of the incidence of malaria cases?
2. What are the estimates of **cost-effectiveness** of the seasonal or hybrid schedules (incremental cost effectiveness ratio, cost per DALY averted, cost per case averted, cost per death averted), in comparison to the age-based schedule?

Overview: Awarded Research Projects

Research aim	Country	Research Consortia	
		Lead	Partners
1/Uptake: Identify approaches and interventions to increase the uptake of malaria vaccine and other health interventions during routine visit timepoints/ touchpoints	Burkina Faso	PATH	<ul style="list-style-type: none"> Centre de Recherche en Santé de Nouna National Institute of Public Health
	Mozambique		<ul style="list-style-type: none"> Maraxis Instituto Nacional de Saúde
	Kenya	Sabin	Kenya Medical Research Institute
	Liberia		<ul style="list-style-type: none"> University of Liberia, School of Public Health US Center for Disease Control and Prevention University of Liverpool, School of Tropical Medicine
2/Seasonality: Conduct a comparative assessment on the feasibility and effectiveness of alternative schedules and delivery strategies of malaria vaccines in areas of highly seasonal malaria transmission	Guinea	European Vaccine Initiative	<ul style="list-style-type: none"> London School of Tropical Medicine and Hygiene Special Programme for Research and Training in Tropical Diseases
	Benin		<ul style="list-style-type: none"> Université de Thies Centre de Recherche Entomologique de Cotonou (CREC) African Institute for Research in Infectious Diseases (AIRID)
	Nigeria	Malaria Consortium	

Presentation focus

- **PATH:** Team based in the US, Burkina Faso, and Mozambique
- **Centre de Recherche en Sante de Nouna (CRSN):** Implementation Research Lead in Burkina Faso
- **Maraxis:** Implementation Research Lead in Mozambique



Malaria vaccine dose schedule

WHO recommends providing the malaria vaccine in a schedule of 4 doses, beginning at around 5 months of age.

	Dose 1 (MV1)	Dose 2 (MV2)	Dose 3 (MV3)	Dose 4 (MV4)
Burkina Faso	5 months	6 months	7 months	15 months
Mozambique	6 months	7 months	9 months	18 months

Health system and caregiver feedback on integrated approaches with malaria vaccines

Dr. Ali Sie

Nouna Health Research Centre/National Institute of Public Health,
Burkina Faso



Key partners

- Nouna Health Research Center/National Institute of Public Health (Burkina Faso)
- PATH (Technical Partner)
- Gavi, the Vaccine Alliance (Financial Partner)

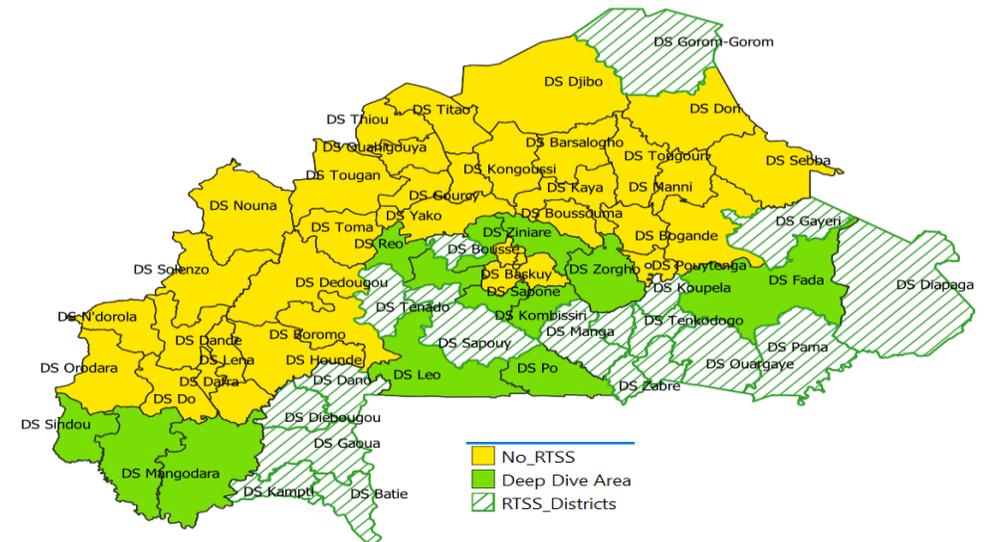
Burkina Faso context

Malaria burden

- 95% of all malaria cases and 96% of all deaths are in the African region.
- Burkina Faso is among the ten most affected countries: 10 million cases and 3,000 deaths in 2024.

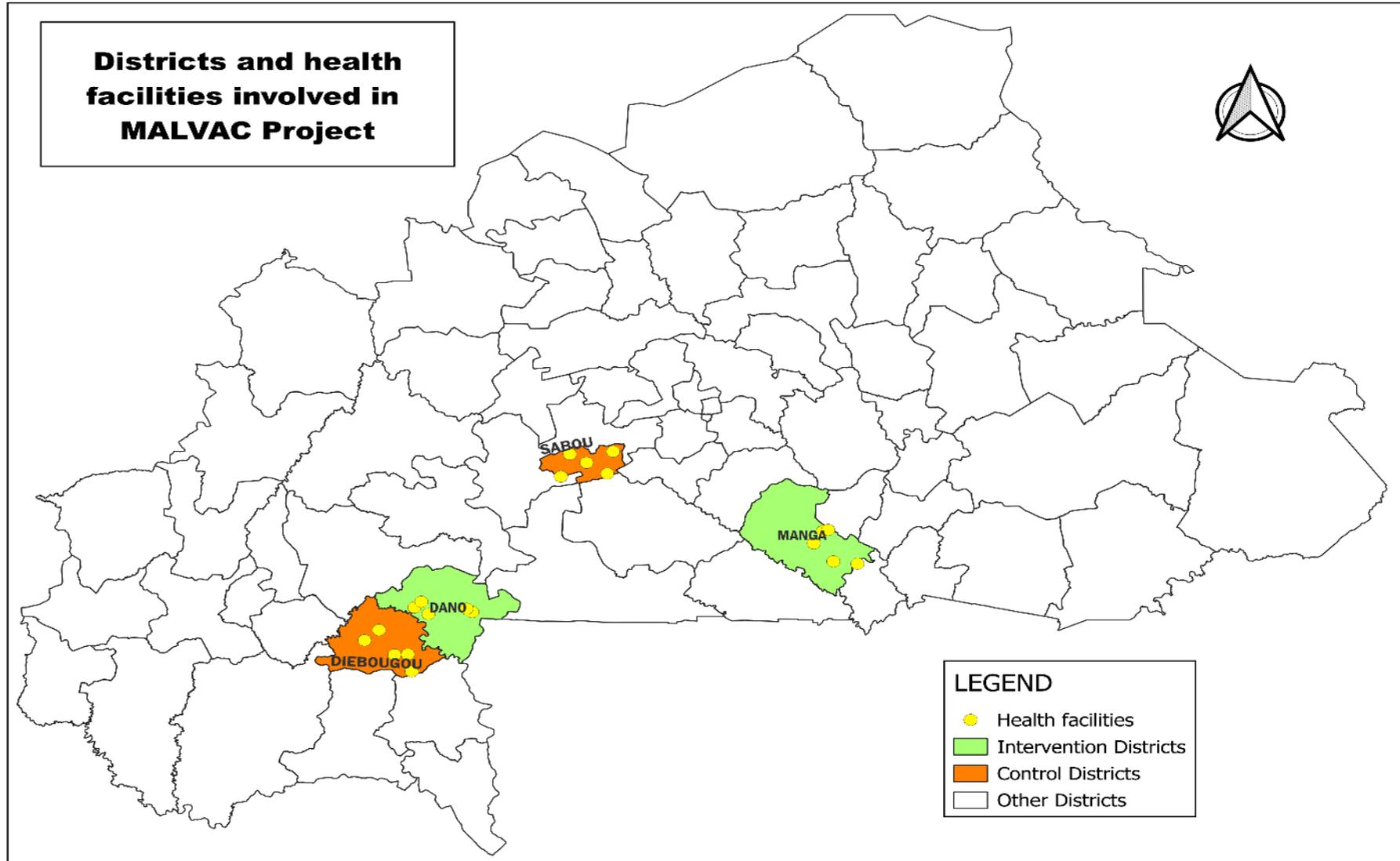
Malaria vaccine

- Malaria vaccine (RTS,S) was introduced in 27 districts in February 2024.



What did we do?

Study sites



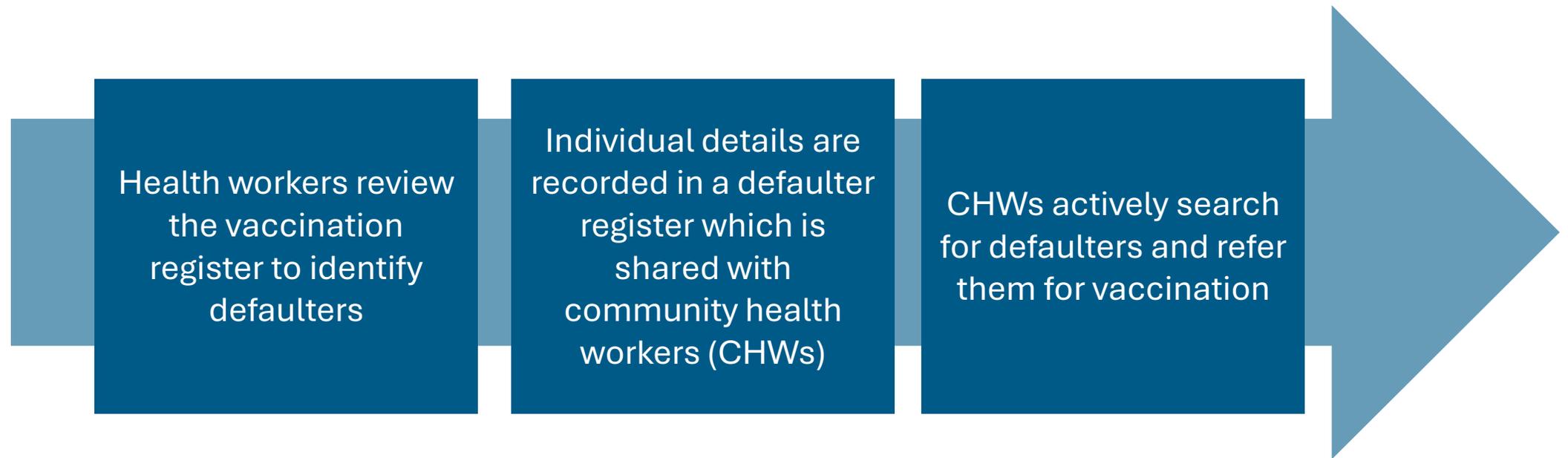
Introduced three interventions to improve uptake of the malaria vaccine

1- Searching for and vaccinating children who are not up to date with their vaccinations during routine vaccination (or defaulter tracking)

2- Searching for and vaccinating children who are not up to date with their vaccinations during any contact with health facilities (identifying missed opportunities for vaccination)

3- Searching for and vaccinating children who are not up to date with their vaccinations during seasonal malaria chemoprevention (SMC)

Intervention 1: Searching for and vaccinating children who are not up to date with their vaccinations during routine vaccination (or defaulter tracking)

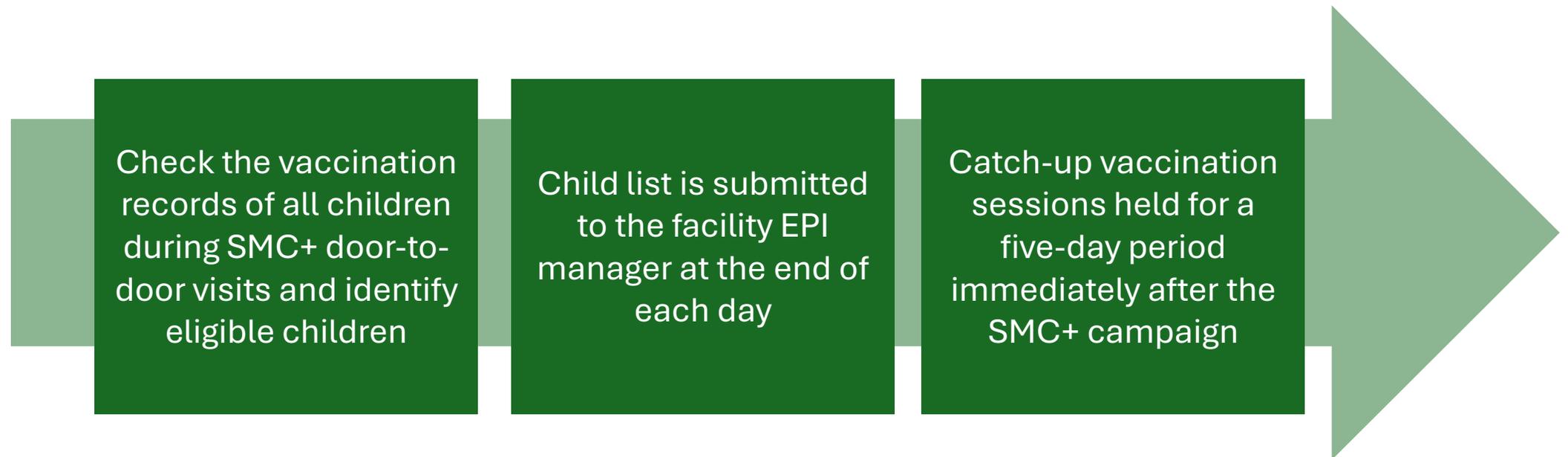


Intervention 2: Identification and vaccination of children who are not up-to-date with their vaccinations during any contact with health facilities (identifying missed opportunities for vaccination)



- Focus on children ages 0 to 23 months.
- Opportunities for contact include family planning, prenatal or postnatal consultations, well-infant consultations, or curative consultations for the caregiver or child.

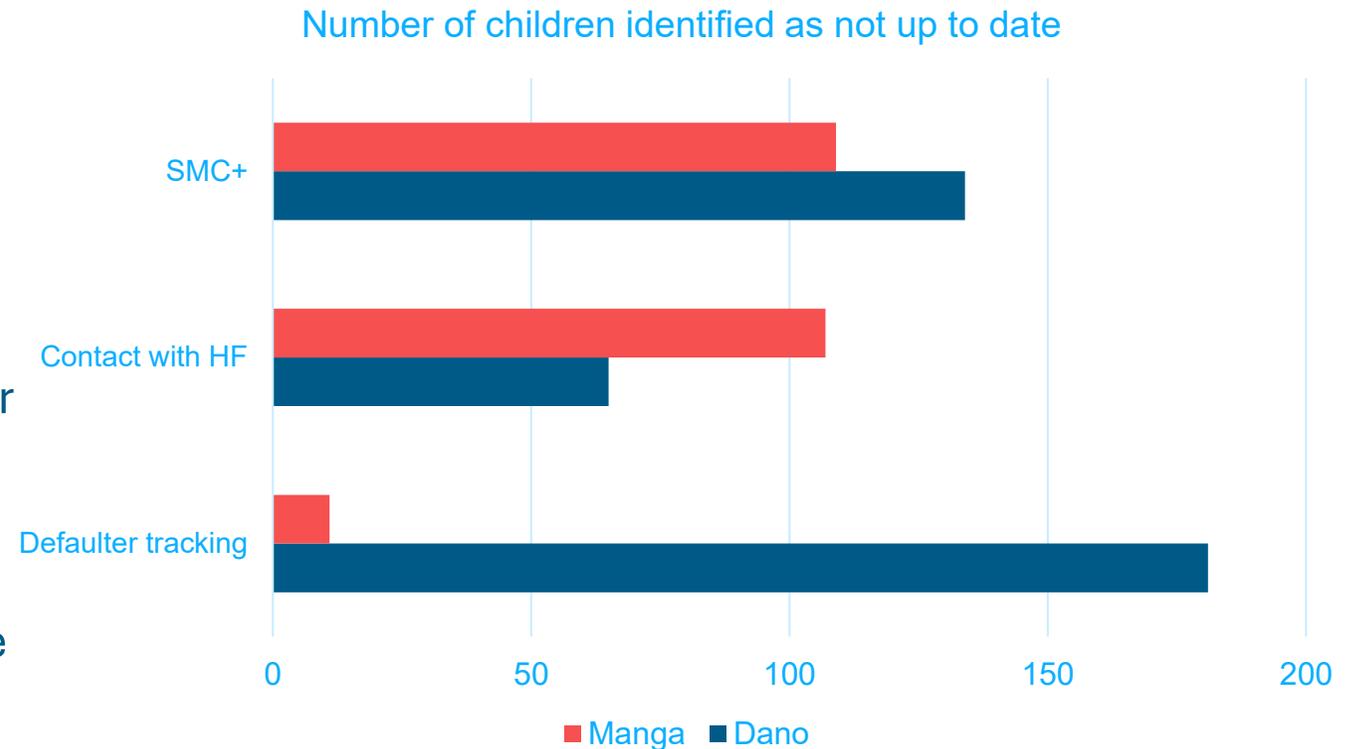
Intervention 3: Identification and vaccination of children who are not up to date with their vaccinations during SMC+



What did we learn?

Vaccination uptake

- 607 children were identified as not up to date across all interventions (July–October 2025).
- Children identified varied by district: defaulter tracking accounted for nearly half in Dano, while SMC+ accounted for nearly half in Manga.
- Of the 607 children identified, 494 (81%) were caught up. 385 received the malaria vaccine.



High acceptability of the interventions

On a scale of 1 to 5, CHWs and health workers deemed the interventions acceptable (4), or very acceptable (5)

- Interventions feasible and achievable
- Interventions integrated into existing workflows (in some cases reinforcing practices that should be happening)
- Opportunity to identify children who are not up to date
- Door-to-door approach facilitates access to families and child health records to check vaccination status

Factors facilitating implementation

Stakeholder engagement

- Commitment of all stakeholders involved from the outset
- Personal initiative of health workers and CHWs
- Trust placed in CHWs
- Close supervision and communication between the research team and health facilities
- Training and sharing experiences between health facilities

Establishment of tools

- Use of children's identification list
- Registers for identifying children not up-to-date

Caregiver awareness

- Awareness of the burden of malaria promoted caregiver acceptance of vaccination
- CHWs discussed lost-to-follow-up children during other awareness-raising activities (e.g., monthly community meetings)
- Raising parents' awareness of the need to keep their children's health records at home or entrust it to a relative

Availability of resources

- Covering fuel and communication costs for catch-up visits
- Availability of vaccines

Implementation challenges

Facility readiness

- High workload; insufficient staff
- Involvement of CHWs in numerous activities (particularly during SMC+)
- Insufficient logistical resources (motorbikes, fuel)
- Lack of capacity, and technical challenges in updating the EIR

Reaching children

- Absence of parents at home related to farm work during SMC+
- Difficulties in locating certain children
- Mobility of mothers/caregivers
- Areas that are difficult to access
- Loss and damage of children's health records

"One of the difficulties and constraints in the field is staff shortages" - (ECD_D_2)

Effects on the performance of health workers

- Improvement in daily practices of health workers and CHWs
- Reflex to systematically check vaccination status at all points of contact
- Reduction in the number of children who are not up to date

“All staff have been trained on how to identify those who have been lost to follow-up, how to identify missed opportunities, and how to catch up in practical terms. So, at all levels, whoever is on duty can catch up on missed opportunities.”

- Health worker (D_14)



Health worker training in Dano

Costs of the interventions

Screening children at all contacts with the health facility to identify missed opportunities for vaccination (MOVs) has a lower cost per child vaccinated compared to SMC+ integration and defaulter tracking.

Intervention	Economic cost (USD)	Children reached with malaria vaccine	Cost per child reached (USD)
1- Defaulter tracking	9,793	130	75
2- Identifying MOVs	4,220	100	42
3- SMC+ integration	11,010	156	71

Conclusions

- **MOVs and SMC+:** Integrating record checking into routine services and mass campaigns is acceptable and feasible, without placing an excessive burden on health workers. These interventions can significantly increase the number of children caught up.
- **Defaulter tracking:** The effectiveness of active search by CHWs and mobile teams for children who are not up to date depends on ease of access to localities and the presence of parents during the rainy season.

Lessons on equity



Actively seeking out opportunities for contact makes it possible to reach children who have previously fallen through the cracks of the system.

Integrating immunization record checks into SMC+ campaigns and all contacts with health facilities can reduce inequity by targeting children who visit the health system for other reasons but are behind on their vaccinations.



Integrating services improves access to vaccination for the most vulnerable populations

By checking vaccination status during any contact with a health care provider and offering vaccination, the intervention improved access to vaccination for children whose families rarely visit the health center. This flexibility particularly benefited households facing geographical constraints in accessing health services.



Strengthening the role of CHWs in tracking lost-to-follow-up children, including during the SMC, improves equity in coverage

CHWs have played a key role in locating children in remote areas and convincing reluctant households. Their social roots make it easier to overcome sociocultural barriers, helping to reduce disparities in access to care.

**What are the key
recommendations?**

Implications for sustainability and scale-up in Burkina Faso

1. Material resources

- Provision for tablets
- Allocate sufficient means of transportation

"The problem with motorcycles, the problem with transportation. In fact, since it's far away, here in Manga, it's far away. You get up, the motorcycle doesn't perform well, it's complicated. People have to get up with their own vehicles." (Health worker_N_12).

2. Human resources

- Increase staff number

3. Financial resources

- Financial motivations (fuel, internet connection, communication, etc.)

"We need financial resources to facilitate communication. There is also the logistics of transportation for EPI activities that must be carried out in the field, and for that we need a means of transportation." (ECD_D_2).

4. Governance

- Continuity of training and supportive supervision
- Clarification of the roles of each actor in the system
- Reduction in the number of doses per vial

Recommendations for countries introducing malaria vaccine interventions

- Foster strong collaboration between EPI and NMCP
- Engage stakeholders throughout the process: co-design, joint planning, supportive supervision
- Integrate interventions into existing delivery systems and workflows for sustainability



Co-design workshop

Integrated approaches for malaria vaccines: what worked, what didn't work, and why

Daan Velthausz, PhD
Maraxis

Mozambique context

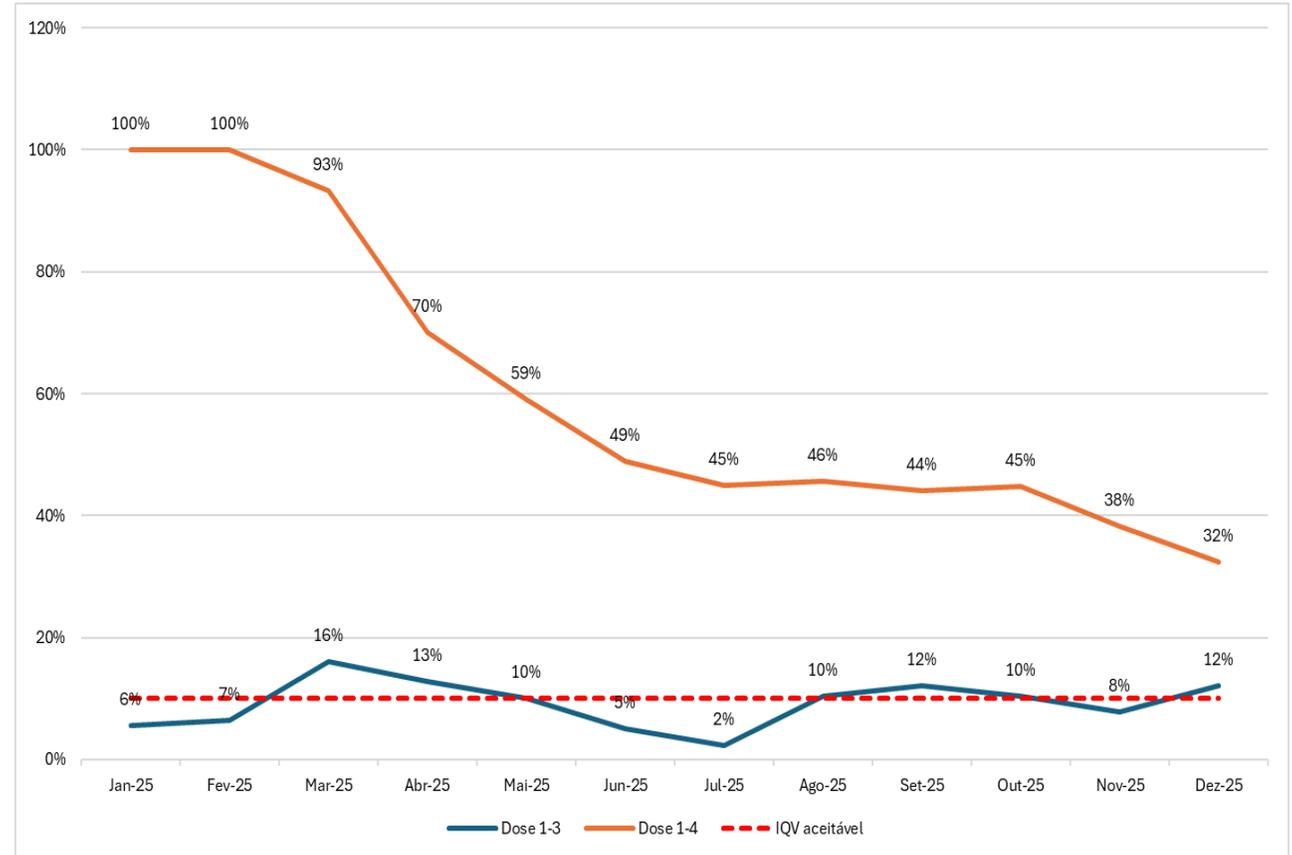
Malaria burden

- 10.7 million cases annually
- 10,000 deaths per year
- 29% of outpatient visits
- Zambézia Province: 52% prevalence in children < 5 years

Immunization coverage

- Penta coverage: 89% nationally, 78% in Zambézia Province
- Malaria vaccine (R21) introduced in Zambézia in August 2024
- Low coverage of malaria vaccine 3rd and 4th dose

Malaria vaccine dropout rates (Dose 1–3 / Dose 1–4), Zambézia Province



Main Challenge: How can we leverage the introduction of the malaria vaccine to strengthen routine immunization and other child health services?

What did we do?

Prioritizing integrated approaches

The Mozambique Expanded Program on Immunization (EPI), National Malaria Control Program (NMCP), and PATH collaborated to identify two interventions to increase uptake of malaria vaccines:

1. Integration of immunization and early childhood development
2. Defaulter tracking

We implemented these interventions in 10 health facilities in Maganja da Costa and Pebane districts (see map), where PATH is providing malaria vaccine technical assistance.

We conducted an implementation research study to understand the acceptability, feasibility, and costs of the interventions during the early implementation phase.



Intervention 1: Early Childhood Development

Components:

A. Playbox sessions in the health facility waiting room

- Conducted by community health workers (*Agentes Comunitários de Saúde*)
- Group sessions with caregivers and children
- Use of a playmat, serial album, and handmade toys made from recycled materials
- Held 3 times per week

B. Monitoring developmental milestones during child health visits

- Individual assessment (observation of motor, cognitive, social, and language skills)
- Use of developmental milestone posters

C. Individual counselling during child health visits

- Guidance on responsive care and early learning
- Referral when necessary



Intervention 2: Defaulter tracking

Components:

- **Systematic identification:** Facility health workers review the child register book at the end of each month to identify defaulters and fill out defaulter tracking forms for each community in their catchment area.
- **Community follow-up:** Community defaulter forms are shared with RED/REC focal points and community leaders for follow-up (awareness and mobilization) to support defaulters to return to the health facility for vaccination.
- **Planning:** Use of defaulter tracking data to plan mobile brigades (community outreach services).



What did we learn?

Expected practices were not consistently implemented

Growth monitoring is a standard national policy but was not consistently implemented by health workers.

- Through discussion with health workers during the study mid-term reflection meeting, they reported there was **no systematic practice** in place **to detect developmental delays** and minimal examination of children was done before the intervention was introduced.
- **Prior to the intervention** training, health workers were less familiar with what to screen for and were **not conducting systematic screening**.

Only 20% of facilities had functional defaulter tracking prior to the intervention.

- **Remote facilities** with the highest dropout rates demonstrated **no functional defaulter tracking**, indicating that current approaches fail precisely where they could yield greatest equity gains.

ECD integration: caregivers

- The integration of ECD and malaria vaccination provides a strengthened package of services, which is valued by caregivers who view both as essential services.
- Integrating these services takes advantage of each touchpoint with the health system to screen for immunization and to conduct developmental screening, counseling, and diagnosis—this provides more opportunities for immunization uptake, identification of developmental delays, and caregiver awareness to prevent future developmental delays.
 - *"I didn't decide to come for the vaccine, I came to weigh my baby, then when I found this vaccine, that's when my baby was vaccinated."* (Caregiver, CS Maganja da Costa)
- The intervention addressed an unrecognized gap in parenting skills and enhanced parental engagement.
 - *"Mothers already understand that it's important to talk to my child" (DDS)*
- The playbox sessions resulted in calmer waiting rooms and more engaged caregivers, including the involvement of fathers.
 - *"With these toys, they feel comfortable...no child is crying" (Nurse, CS Mapira)*

Playbox sessions

Reaching 3,000–4,000 caregivers per month with developmental stimulation messages in the local language.

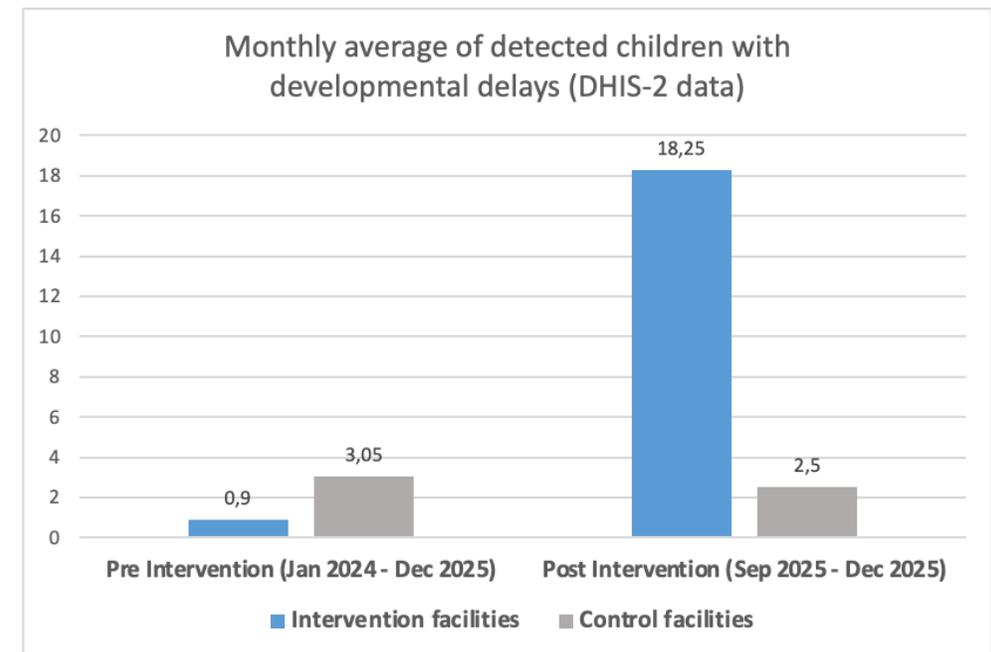
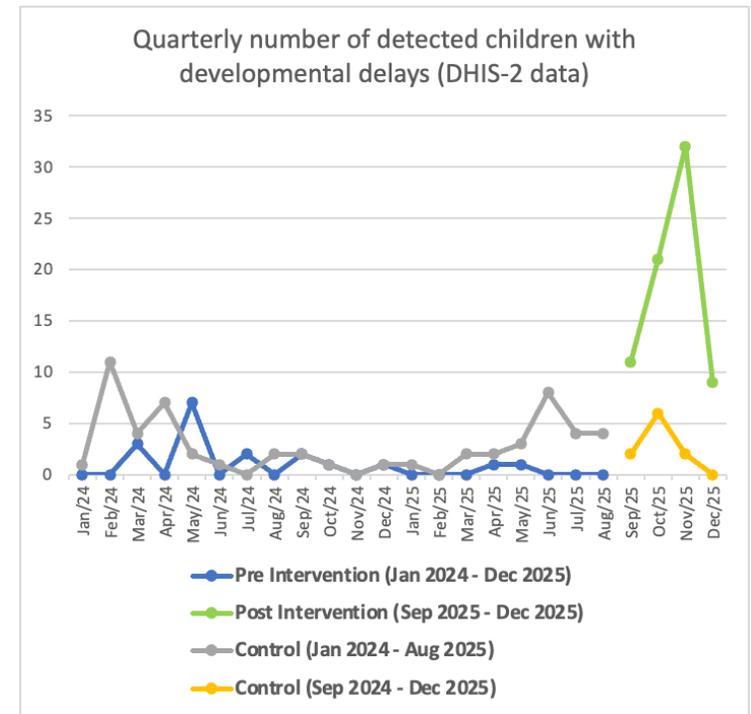


ECD integration: health workers

- With training and mentorship, there was high acceptability and rapid adoption of the intervention among health workers. Health workers strengthened their skills to conduct growth monitoring and improved the quality of child health consultations.
 - *“We managed to diagnose the child... I can say this child has poor development.” (DDS Technician, Pebane)*
- The study interventions were designed using human-centered design principles which contributed to their high acceptability and easy integration into existing workflows.
- However, the intervention introduced additional workload which can lead to deterioration of performance over time if there is not adequate staffing and ongoing support.
 - *“The tasks increased... the hours of work increase.” (Health Nurse, CS Nante)*
- Addressing low-cost materials, change management for local leaders/healthcare professionals, space optimization, and literacy-adapted materials will help mitigate implementation barriers.

ECD Integration: Impact

- Substantial increase in detection of developmental delays
- There was insufficient follow-up time to assess the impact on vaccination rates
- Future learning: are caregivers are more likely to return for subsequent vaccination visits because they had a positive care experience?



Defaulter tracking: stakeholder engagement

Activation of the community structure

- 160 community health workers, RED/REC focal points, health committees and traditional leaders were engaged for community mobilization in promoting routine immunization and malaria vaccination, screening, and follow-up of children who missed vaccinations.
- *“Each community actor, each focal point has the goal of undertaking registration...search for defaulting children and return them” (DDS)*

Technical support network

- VillageReach: provided technical assistance and materials.
- DPS supervisors: acted as lead trainers, ensuring a sustainable capacity-building structure.
- Ministry of Health (MOH) and malaria vaccine partners: monitored and tracked progress.



Defaulter tracking: operational barriers

Despite **high acceptability** among health workers (>75%), **operational barriers** limited the implementation.

High acceptability ≠ Successful implementation

What stakeholders valued

- Community-based structure with focal points
- Return of defaulters
- Systematic tracking approach
- Use of defaulter data to plan mobile brigades

What prevents implementation

- Manual record-keeping burden
- Transportation shortages (fuel challenges)
- Geographic access barriers
- Inadequate staffing levels
- Lack of digital platforms

Four interconnected system constraints

These constraints are **fundamental rather than peripheral**: they cannot be solved through programmatic adjustments alone

1. Manual Health Information Systems

Creating unsustainable workload burden; 60% of district managers identified as primary barrier.

9x recommended digitalization as solution.

2. Programmatic ambiguity (NMCP vs EPI) no clear roles

No clear delineation of roles for training, supervision, and budgeting.

"I don't see much relevance in having malaria colleagues chasing children"

3. Transportation & Fuel Shortages

Preventing community follow-up despite CHW motivation.

"We need resources to travel and these resources are, at times, scarce"

4. Community Health Worker Motivation Gaps

Working without transportation, materials, or consistent incentives.

"I never had any support... worked alone"

Implications & Recommendations

- Both interventions showed **high acceptability** among **health workers and caregivers**. Acceptability stems from perceived visible health impact, successful integration into routine services, and community behavior change.
- Acceptability and proof-of-concept success are necessary but insufficient to sustain implementation. It is **critical to address system constraints** to create the operational conditions to implement interventions systematically.
- The **ECD integrated intervention** shows **promising potential** to improve health worker adherence to growth monitoring practices, provide additional opportunities for vaccination and ECD screening, increase identification of developmental delays, and improve caregivers' service experience.
- Strong **engagement of local stakeholders** (technical partners, community health workers, district/provincial health teams) and joint supervision contributed to early implementation success.
- This implementation research study aimed to **understand the acceptability, feasibility, and costs** of two interventions during the early implementation stage. **Additional time** and analysis is required to inform decisions about scaling to other health facilities. From MOH colleagues, we heard a desire for quantitative data showing impact and cost-effectiveness over a **minimum 6-month** period before scale-up.

Thank you

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Q&A
