Annex C: Malaria Vaccine Programme Update

Section 1: Executive summary

The Malaria Vaccine Programme (MVP) is advancing rapidly and achieving key milestones. The Gavi Independent Review Committee (IRC) has recommended a total of 23 countries for approval for sub-national vaccine introduction, and seven of these countries were also recommended for approval for their scale-up applications. With its support of the successful rollout of RTS,S in eight countries and the second malaria vaccine (R21) in four countries, the Gavi Alliance has continued to manage the malaria vaccine market of two prequalified vaccines (RTS,S and R21) and supply is expected to be able to meet demand with sufficient planning and allocation across the market[1]. These achievements are significant and reflect continuous efforts to integrate malaria vaccination into immunisation and malaria control programme approaches. Rapid progress has also been accompanied with learnings on risk communication and community engagement, sensitising populations on vaccines with unique schedules, funding requirements for sub-national introductions, among others. These are being addressed through targeted technical assistance and stronger partnerships and forums.

The Alliance and expanded partners continue convene key coordination mechanisms and provide extensive technical assistance (TA) to countries, covering application development, vaccine planning and introduction, and strengthened uptake and service delivery.

The Secretariat, in conjunction with Alliance partners, continues to adapt the scope and design of the programme, based on Board direction for Gavi 6.0, World Health Organization (WHO) guidance to counties on age-eligibility, and Gavi's role in fostering healthy markets. The Secretariat also continues to work closely with the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) to ensure a holistic approach to malaria prevention.

The MVP learning agenda is advancing to gather operational evidence and address priority questions to optimise the impact of the MVP. Additionally, four peer-learning workshops have been conducted across Africa in 2024, fostering knowledge sharing on vaccine introduction and scale-up, and emphasising cross-programmatic planning between malaria and immunisation programs.

This annex provides detailed updates on country implementation and support (Section 2), Gavi's scope of support and programme design (Section 3), and the MVP learning agenda (Section 4). The collaboration between Gavi and the Global Fund around malaria is further discussed in Section 5 and agenda item 10.

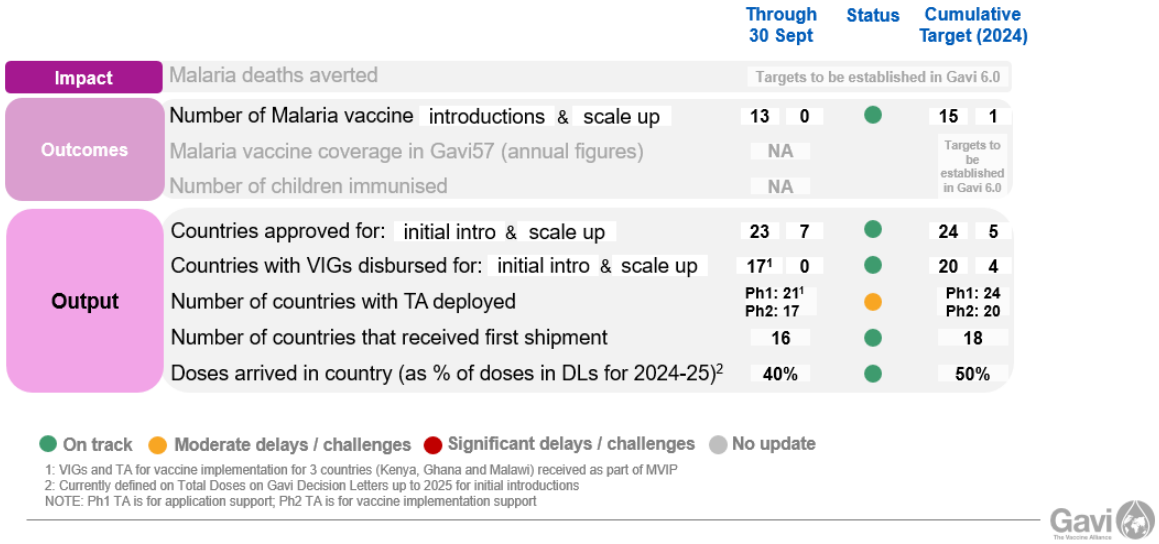
[1] Gavi's efforts to maintain a healthy market include ongoing dialogue with manufacturers, monitoring supply and demand forecasts, and continuous implementation of product matching for new approvals.

Section 2: Country implementation and support

2.1 Progress update

Figure 1 (below) provides an overview of key metrics and targets for the MVP and Table 1 (at end of document) provides country-specific summary status of IRC-approved applications.

Figure 1. Progress update on malaria vaccine programme



Country interest and demand for malaria vaccines remains high. 30 countries have formally expressed interest in introducing malaria vaccines. To date, 23 new introduction applications have been submitted by countries and have been recommended for approval by the Gavi IRC. In addition, seven countries have also been recommended for approval to scale-up their programme into additional moderate and high transmission areas according to country priorities.

Countries with approved applications have been matched to one of the two pre-qualified malaria vaccines, based on dialogue and principles established by Gavi and Alliance partners, including: country preferences and affordability/ co-financing status, minimising need for vaccine switching and roll-out delays, and the Alliance priority of maintaining a healthy market. The product matching process considered potential future needs and ensures that each country would be able to scale up with the matched product (RTS,S or R21).

Following initial introductions in non-MVIP[2] countries (Cameroon and Burkina Faso) during Q1, eight additional countries introduced malaria vaccines between April and September 2024 bringing the total of countries that have introduced the vaccine to 13. These include Benin, Sierra Leone and Liberia in April, Côte d'Ivoire and South Sudan in July, Central African Republic and Mozambique in August, and Niger in September. Countries introduced the

[2] Malaria Vaccine Implementation Programme pilots in Ghana, Kenya and Malawi

vaccine into their subnational priority areas, and the four countries that introduced in July and August are using the second malaria vaccine pre-qualified by WHO, R21. Vaccine introduction grants (VIGs) were disbursed for each of these ten countries and to other countries planning introductions in Q4 2024, including Burundi, Niger, Sudan, Chad and Nigeria.

2.2 Technical Assistance (TA)

The MVP model of bringing in additional and coordinated TA through expanded partners for vaccine applications and vaccine roll-out in the countries has provided valuable additional capacities at the country level as well as lessons of areas to improve.

For applications: Gavi-contracted consultants supported the application development in 21 of these countries (including two MVIP countries) and the Secretariat and Alliance partners provided active pre-screening and feedback to ensure quality and alignment with Gavi requirements. The WHO Global Malaria Programme (GMP) continues to support countries preparing applications in stratification of moderate and high transmission areas as well as subnational tailoring of malaria interventions. The WHO supports countries to consider malaria vaccines as part of a comprehensive malaria control plan, and this comprehensive plan is a central consideration in their Gavi applications. Gavi and Alliance Partners have supported countries in successfully applying for the malaria vaccine and this support continues for both vaccine funding applications and scale-up planning.

For introductions and rollouts: Expanded TA partners are supporting fourteen countries with introduction planning, preparations and vaccine roll-out (the three MVIP countries also received TA as part of MVIP). There were delays in finalising the selection of TA partners with some countries (e.g. Ghana, Nigeria, Sudan) due to the identification and selection process within the countries. These delays were resolved through direct engagement by the Secretariat country teams; however, they do impinge on the time available for country planning.

TA providers work with countries and core Alliance partners WHO and UNICEF to support the phased vaccine introductions strategies including introduction planning and readiness assessments, development of training and communication materials, support in training and capacity building for health workers and stakeholders in-country. Technical assistance partners also help maintain/update monitoring tools and help support the ministries of health in the coordination of in-country stakeholders working on the implementation of the malaria vaccine. Documentation and dissemination of lessons learnt in support of introductions is another key component of TA partners scopes of work with lessons fed into the broader MVP learning agenda.
Global and regional coordination mechanisms mentioned ahead are leveraged to help align activities and strategies for partners working on vaccine introduction.

2.3 Coordination of the malaria vaccine programme implementation

The Malaria Vaccine Coordination Team (MVCT)[3], co-chaired by the Gavi Secretariat and WHO, and with participation of immunisation and malaria partners[4], continues to serve as a forum to discuss programme design, country readiness and implementation progress. Concurrent with the MVCT, WHO AFRO established the strategic initiative for the Acceleration of Malaria Vaccine Introduction and Rollout Across Africa (AMVIRA) in January 2024. The objective of the AMVIRA initiative is to ensure that all eligible countries in the WHO African Region establish and sustain the required capacities and capabilities for the effective introduction and rollout of malaria vaccines at national and subnational levels, aiming to reduce malaria morbidity and mortality among children. AMVIRA's implementation has included the establishment of weekly meetings that bring together officials from Ministries of Health, WHO, UNICEF, Gavi and other partners to discuss preparatory actions and share implementation experiences with the malaria vaccines.

The MVCT and AMVIRA continually work to refine the flow of information and escalation of requests for technical and funding support from countries and realise the most efficient collaborative mechanism that leverages the country-centric focus of AMVIRA and the global reach of the MVCT.

2.4 Experiences and lessons from country implementation

Gavi continues to work with Alliance partners and implementing countries to capture the experiences and lessons from the introduction and implementation of malaria vaccines. The previous update to the Board in June 2024 illustrated some of the early lessons from early introductions. As illustrations:

- Vaccine schedules: Aligning the schedule for the fourth dose to coincide with administration of other vaccines provided in the second year-of-life (second-dose measles-rubella vaccine, or MCV2 and meningococcal A conjugate vaccine) and the provision of insecticide-treated nets (ITNs) was shown in Ghana to significantly increase the uptake of the vaccine.
- Risk Communication and Community Engagement (RCCE): Sufficient time, resources, and attention need to be dedicated to readiness and preparatory community engagement to counter rumours and negative messages. RCCE activities also need to balance the operational needs for sufficient funding, planning, and implementation with the resourcing, scheduling and political demands for public launch ceremonies.
- In-country coordination between malaria and immunisation programmes: As observed in the MVIPs, early and consistent coordination between NMCP and EPI is critical with regular meetings established, convened and

[3] MVCT is co-chaired by the Gavi Secretariat and WHO, participants include The Global Fund, World Bank, Bill & Melinda Gates Foundation, President's Malaria Initiative (PMI), PATH, Clinton Health Access Initiative (CHAI), US Centers for Disease Control and Prevention (CDC), Africa Centres for Disease Control (CDC), Jhpiego, AEDES, Agence de Medecine Preventive (AMP), Dalberg and UNICEF.
[4] Other partners include the Global Fund, the World Bank, Bill & Melinda Gates Foundation, PMI, PATH, CHAI, UNICEF, Jhpiego, JSI, Breakthrough Action, AEDES, and Dalberg.

functional. The support of coordination mechanisms is a core element TA partner scopes of work and AMVIRA has continued to schedule country calls with in-country EPI and NMCP teams to help facilitate their deliberations and planning. Gavi, Global Fund and WHO have included assessing and supporting this coordination as an area of work under the Gavi-Global Fund coordination workstream for malaria (Section 5).

- Programme funding: Funding gaps for malaria vaccine introductions have revealed a mismatch between vaccine introduction grants (VIG) policies, which are based on target birth cohorts, and the actual resources needed for subnational introductions. While VIGs are not meant to cover all costs, subnational rollouts - targeting smaller groups - have led to delays and shortfalls in key activities like Risk Communication and Community Engagement (RCCE). Secretariat teams have worked to address these challenges on a country-by-country basis by finding synergies with other Gavi support like Health System Grants, and in some instances additional partners (e.g. PMI, UNICEF, WHO and PATH) have augmented VIG funds to support key activities. To date, no country has been unable to introduce the vaccine due to funding gaps associated with the introduction activities. However, this experience with subnational introduction should be considered as Gavi is planning for future subnational introductions.

Section 3: Future scope of Gavi support and key programme design updates

3.1 Scope of support

In April 2024, the Gavi Board, as part of trade-off discussions in the context of limited country capacity and funding constraints, agreed to pace the speed of new introductions or re-scope select new programmes, including malaria. An additional reduction in outlay of up to US$ 200 million was directed for the malaria programme in Gavi 6.0. Following the Board's guidance, the Secretariat and Alliance Partners identified strategies to achieve this target while seeking to limit reductions in impact or equity while managing Gavi commitments. It was determined that Gavi will initially limit its malaria vaccine support to 85% of countries' moderate and high transmission settings as Gavi transitions from Gavi 5.1 to 6.0. This approach was shared with the Board in June 2024 and has subsequently been communicated to Ministries of Health (MoH) formally. The Secretariat and Partners continue to work together with countries for the continued, incremental scale up of their malaria vaccine programmes.

3.2 Gavi's role in managing product allocations and vaccine switch requests

With the pre-qualification of a second malaria vaccine (R21/Matrix-M) in December 2023, the Alliance is now managing the allocation of two functionally equivalent malaria vaccines amidst information asymmetries and country requests to switch or choose specific vaccines. Vaccines were allocated to the initial 19 countries based on Product Matching Principles established to optimise dose utilisation, considering country preferences, affordability, and

market health. Current country product allocations have taken into account key financial, programmatic and market considerations, including utilisation of the 18 million doses of RTS,S contracted by UNICEF for Gavi 5.0 and sustaining market health in Gavi 6.0.

Based on the WHO recommendation that declares the two malaria vaccines equivalent along the core dimensions of efficacy, duration of protection, safety, and considering Gavi's role in fostering healthy markets, it was determined that malaria will be treated as a managed/ 'no brand choice' programme through the duration of Gavi 6.0 and that elective switches will not be supported in the immediate term. This position will enable Gavi to actively manage the country-specific allocations, programme costs, and global markets for the two products.

This approach reflects the need for supply security for such a politically sensitive vaccine programme, given that supply production of both vaccines is still in early stages and the Alliance Market Shaping Roadmap calls for at least a 2-supplier market/2-product programme. This product matching/allocation approach will be revisited periodically to ensure it is still fit for purpose. This recommendation may be perceived as Gavi being misaligned with its "country-driven" approach; however, the malaria vaccine programme is in a situation where individual country priorities and short-term aims may not align with the collective needs of the countries and medium- to long-term goals of the programme.

3.3 **Added flexibility around age eligibility for malaria vaccines at introduction**
Building on lessons from the pilot countries, early feedback from introducing countries, and the Alliance's strategic aims around strengthening institutionalised routine catch up policies, countries have been encouraged by WHO to allow flexibility around the initial age-eligibility for malaria vaccines during their initial introduction. The MVP has reflected these changes in Gavi's current vaccine funding guidance, allowing countries flexibility to align their initial age-eligibility of the vaccine with their national catch-up policies. This approach was found to boost uptake of the vaccine in the pilot countries and the supply, and financial implications of this approach were found to be time limited around the introduction of the vaccines. Current financial forecasts (v22) do not include additional costs from vaccinating wider age groups at the time of introduction. If adopted broadly by countries, this may result in an upside risk on financial needs of the programme in Gavi 6.0 depending on the number of countries implementing this flexibility during their initial vaccine launches in the next strategic cycle. The Audit and Finance Committee has been notified of this as a risk. The Secretariat and Alliance partners will closely monitor variance to identify likelihood of these being absorbed in current forecast and balanced by pace of scale up in introducing countries.

Section 4: Malaria Vaccine Programme Learning Agenda

In recognition of outstanding evidence gaps and in anticipation of questions for the design and implementation of the malaria vaccine programme (MVP), the Gavi Board included US$ 10 million for the MVP learning agenda in its December 2021 authorisation of the programme. Gavi has programmed these learning agenda resources through two primary channels: the commission of targeted implementation research studies and the support and documentation of peer-based learning on the experiences and lessons from implementing countries. The MVP-specific learning agenda funds are also complementary to the Gavi support for the MVIP (pilot evaluation of the vaccine in Ghana, Kenya, and Malawi), which concluded in December 2023, from which lessons from the data and evidence generated continue to be shared.

4.1 Malaria vaccine programme learning agenda implementation research

Gavi's implementation research support funds targeted operational and implementation research to answer priority questions with the greatest bearing on the overall impact of the MVP. An initial US$ 1.9 million was awarded for the completion of a case control study (initially funded by European & Developing Countries Clinical Trials Partnership and embedded within the MVIP) that aims to determine the incremental benefit of the 4th dose of RTS,S/AS01 and whether a three-dose schedule might be sufficiently effective in perennial transmission settings. The review of findings from this study by the SAGE/MPAG Working Group is anticipated in Q4 2024.

Additionally, Gavi has worked with WHO and the PMI Insights project to develop a comprehensive malaria vaccine learning agenda from which the Alliance has prioritised research and learning questions of most importance to Gavi's malaria vaccine programme. Complementing these efforts was a parallel exercise undertaken by Gavi's Market Shaping Team to identify priority agenda items from a market shaping perspective. The output from these two processes was synthesised into a unified learning agenda anchored on several broad research aims.

Gavi will use learning agenda funds to support implementation research into two prioritised research aims in MVP-supported countries and programmes. These two research aims are:

- Research Aim 1: Identify approaches and interventions to increase the uptake of malaria vaccine and other health interventions during routine visit timepoints/ touchpoints.
- Research Aim 2: 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

These aims are aligned with Gavi's health system strengthening support and highlight the opportunities for malaria vaccines to strengthen, and be strengthened by, other malaria and primary health care interventions and

approaches. These aims also align with Gavi's emphasis on coordination with the malaria control programmes, and our cross-organisational collaboration with the Global Fund.

Gavi published a request for proposals (RFP) to address these research aims in August 2024. Over 40 organisations, including universities and research organisations in malaria-endemic countries in Africa, have expressed their intention to submit proposals in September 2024. The submitted proposals will be reviewed by a team from the Gavi Secretariat, WHO and USAID/PMI. It is anticipated that contracts will be awarded, and research implementation will commence made in Q4 2024. in November 2024. The research proposals will focus on research implementation that can be concluded by end of the end of Gavi 5.0 strategic period; however, there is the potential that in limited (case-specific) instances, research activities may need to extend into early 2026.

4.2 Malaria vaccine peer-learning workshops

Beginning in early 2024, a series of malaria vaccine peer-learning workshops have been organised by AMVIRA, with collaboration and support from Gavi, WHO, PATH, UNICEF and US CDC. The overall aim of these workshops is to contribute to the successful introduction of malaria vaccines by leveraging the experiences and insights of countries that have introduced or are planning to introduce the vaccine. The specific objectives of these workshops are to: (1) share learnings from pilot implementation and recent introductions; (2) provide a forum for discussing technical and programmatic questions and best practices; (3) strengthen knowledge, build capacity and a network among countries; and (4) advance action planning and preparations for vaccine- roll-out.

To date, four peer-learning workshops have been conducted in Cameroon (April 2024), Ghana (April 2024), Benin (May 2024), and Malawi (August 2024) and included representatives from ministries of health (including both the EPI and NMCP), WHO and UNICEF Country Offices, the US CDC/PMI, and TA partners. As evidenced by the inclusion of both EPI and NMCP representatives from the ministries, as well as immunisation and malaria stakeholders, these workshops have continued to highlight the importance of and practice of cross-programmatic planning and coordination. The lessons from these workshops will also be incorporated into the collaboration work between Gavi and the Global Fund.

Additional peer-learning workshops are being planned for 2025 to continue knowledge generation and dissemination as part of the Learning Agenda.

Section 5: Optimal use of vaccines in the context of other malaria interventions, including collaboration with the Global Fund and others

Since the establishment of the MVP, Gavi has echoed the WHO recommendation that malaria vaccines be provided in the context of a comprehensive malaria control strategy. The Global Fund, WHO and Gavi have created a cross partner working group to identify key areas that would benefit from collaboration, coordination and, in some case, integration. Further details are provided on initial activities Doc 10.

Table 1. Summary status of IRC-approved countries as on 30 September 2024

	Country	Introduction Status	Scale-Up Status
1	Ghana	MVIP country – 2019 introduction	IRC Approved; Planned – Q3/Q4 2024
2	Kenya	MVIP country – 2019 introduction	IRC Approved; Planned – Q1 2025
3	Malawi	MVIP country – 2019 introduction	Pending application
4	Cameroon	Introduced – January 2024	Pending application
5	Burkina Faso	Introduced – February 2024	Pending approval
6	Sierra Leone	Introduced – April 2024	N/A[5]
7	Liberia	Introduced – April 2024	Pending application
8	Benin	Introduced – April 2024	Pending application
9	Côte d'Ivoire	Introduced – July 2024	Pending application
10	South Sudan	Introduced – July 2024	IRC Approved; Planned – Q1 2025
11	Mozambique	Introduced – August 2024	IRC Approved; Planned – Q1 2025
12	Central African Republic	Introduced – August 2024	N/A[3]
13	Niger	Introduced – September 2024	Pending application
14	DRC	Planned – Q4 2024	IRC Approved; Planned – Q1 2025
15	Chad	Planned – Q4 2024	Pending application
16	Burundi	Planned – Q4 2024	N/A
17	Nigeria	Planned – Q4 2024	IRC Approved; Planned – Q1 2026
18	Sudan	Planned – Q4 2024	Pending application
19	Uganda	Planned – Q1 2025	IRC Approved; Planned – Q1 2025[6]
20	Togo	Planned – Q3 2025	N/A[3]
21	Mali	Planned – Q1 2025	Pending application
22	Ethiopia	Planned – Q1 2025	Pending application
23	Guinea	Planned – Q1/Q2 2025	Pending application

[5] Approved introduction covered all eligible areas, no scale-up application required.
[6] Uganda to conduct introductions in initial and scale up districts simultaneously