

**SUBJECT: MALARIA VACCINE PILOTS AND LONG-TERM SUPPLY**

**Agenda item: 07**

**Category: For Decision**

## **Section A: Executive Summary**

### **Context**

Despite progress since 2000, the global burden of malaria is increasing. The first licensed malaria vaccine, RTS,S/AS01, is a potential tool to complement existing interventions. In 2016, Gavi, in partnership with others, committed to fund the Malaria Vaccine Implementation Programme (MVIP) for 2017-2020.<sup>1</sup> The MVIP is a pilot of routine programmatic use of RTS,S which will generate evidence to inform future WHO policy recommendations and investment decisions on broader roll-out of RTS,S. Funding for 2021-2023 is now required to complete the MVIP, which was anticipated at the time of the original MVIP funding decision.

While RTS,S policy and investment decisions are on the horizon, a critical decision regarding continuation or otherwise of vaccine production by the manufacturer needs to be made soon (preferably before end 2019) and in advance of the broader policy and investment decisions. There are various options regarding production, each of which has different programmatic and financial trade-offs. This paper seeks Board decisions on both topics (MVIP and vaccine production) based on the recommendations of the Programme and Policy Committee (PPC).

### **Questions this paper addresses**

- 1) What does the latest evidence, including data emerging following the recommendation for pilots, tell us about the safety and impact of RTS,S?
- 2) What is the value of the MVIP and what resources are required to complete it?
- 3) What options are available for Gavi engagement in vaccine production pending policy/investment decisions and what are the implications, trade-offs and risks?

### **Conclusions**

The MVIP will provide critical evidence to inform broader policy and investment decisions. The PPC recommended that the Board approve funding of

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<sup>1</sup> <https://www.gavi.org/about/governance/gavi-board/minutes/2016/22-june/minutes/09---malaria-vaccine-pilots---appendices/>

US\$ 11.6 million for 2021-2023 period of the MVIP, to complement the commitments of the Global Fund and Unitaïd.

There are three options for Gavi's near-term engagement in RTS,S production:

1. No active risk-share/funding, resulting in a stop to production;
2. Risk-share with the manufacturer via a funding commitment to enable continued production;
3. Identify a third party willing to collaborate on designing a risk-share mechanism to enable continued production, minimising Gavi's exposure.

These options carry different programmatic, financial and reputational trade-offs. The PPC has requested that the Board make a decision for Gavi's engagement regarding future malaria vaccine supply from the three options.

## **Section B: Malaria Vaccine Pilots**

### **1. Overview of malaria and RTS,S vaccine**

- 1.1 Globally, malaria is a leading cause of death in children under five. In 2017, there were 219 million malaria cases and 435,000 deaths, 61% in children under five. While mortality has dropped by 60% since 2000 thanks to improved access to 'imperfect tools'<sup>2</sup> used in combination, progress has stalled. In some countries – particularly in sub-Saharan Africa – the malaria burden is growing.<sup>3</sup> Furthermore, there are concerns that the growing disease burden, coupled with the threat of drug and insecticide resistance, will limit our ability to achieve global control targets with existing tools. It is widely recognised that both increased coverage of current tools and the addition of new tools are needed to get back on track. Furthermore, as malaria burden has declined during the past decades and became a more diverse problem, it is clear a "one size fits all" approach is no longer appropriate. Packages of tools tailored to context (e.g., transmission intensity, lifestyle, mobility, etc.) and considering equity, are needed. Given that malaria disproportionately affects the poorest children, and immunisation programmes tend to have greater reach than other health interventions, a malaria vaccine could be a powerful contribution to reaching and protecting the most vulnerable, and with the potential for high impact.
- 1.2 After more than thirty years in development, in 2014 a pivotal Phase 3 trial of the GSK RTS,S/AS01<sup>4</sup> malaria vaccine ('RTS,S') was completed and reported a 39% reduction in clinical malaria and a 29% reduction in severe

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<sup>2</sup> Such as vector control, preventive therapy, rapid diagnostics and effective treatment.

<sup>3</sup> World Malaria Report 2018, WHO

<sup>4</sup> RTS,S is the antigen, while AS01 is the adjuvant

malaria in 5-17 month old children who received 4 doses.<sup>5,6,7</sup> The next year, RTS,S received a positive regulatory assessment from the European Medicines Agency (EMA). WHO's Strategic Advisory Group of Experts (SAGE) on Immunization and Malaria Policy Advisory Committee (MPAC) jointly recommended that RTS,S be further evaluated through implementation pilots, which would inform a future broader policy recommendation.<sup>8</sup> The pilots would address key questions related to the feasibility of administering the recommended 4 doses of the vaccine; the vaccine's impact on reducing childhood deaths; and its safety in the context of routine use. (The pilots are further described in the next section.)

- 1.3 In the 2018 Vaccine Investment Strategy (VIS), RTS,S was assessed as a comparator to other vaccines being considered for investment. The assessment found the vaccine to have high potential public health impact in Gavi-supported countries (~420-490 deaths averted and 100-110K cases averted per 100,000 vaccinated which would equate to ~250-520K deaths and 50-140M cases averted from 2020-2035). This would be in line with, or better than, the current Gavi-supported vaccine programmes. (See Appendix 5 for further detail.) This analysis builds on separate modelling by academic institutions, which has indicated that RTS,S would substantially reduce malaria burden in children and be highly cost-effective in most countries, with one death prevented for every 200 children vaccinated.<sup>9</sup>
- 1.4 Since the Phase 3 trial and recommendation for pilots, further information on the long-term efficacy and safety of RTS,S has become available. An extended follow up study conducted at 3 of the 11 Phase 3 trial sites showed significant protection against clinical malaria during the 7-year period in children who received 3 or 4 doses of the vaccine and significant protection against severe malaria in children who received 4 doses.<sup>10,11</sup> There was no

<sup>5</sup> The study also reported a 62% reduction in severe malaria anaemia and a 29% reduction in blood transfusions

<sup>6</sup> Based on 4 year follow-up following primary vaccination series

<sup>7</sup> Efficacy and safety of RTS,S/AS01 malaria vaccine with or without a booster dose in infants and children in Africa: final results of a phase 3, individually randomised, controlled trial (Lancet, Volume 386, No. 9988, p31–45, 4 July 2015).

<sup>8</sup> Malaria vaccine WHO position paper (2016) <https://www.who.int/wer/2016/WER9104.pdf?ua=1>

<sup>9</sup> Penny MA, Verity R, Bever CA, Sauboin C, Galactionova K, Flasche S, et al. Public health impact and cost-effectiveness of the RTS,S/AS01 malaria vaccine: a systematic comparison of predictions from four mathematical models. Lancet. 2016;387(10016):367-75.

<sup>10</sup> The results of this study, published in 2019, found sustained protection against malaria and a continued positive safety profile over the 7-year period. There was no excess risk of severe malaria among those children who received only 3 doses of RTS,S/AS01, and any rebound seen after 3 doses of the vaccine was time limited; children who received either 3 or 4 doses benefited for at least 7 years after vaccination. These findings provide further reassurance that even if there might be a period of increased risk for severe malaria following RTS,S/AS01 vaccination (compatible with "rebound"), vaccination would still result in an overall positive effect in immunised children. Importantly, these results indicate that although the fourth dose would provide optimal benefit, children benefit from either 3 or 4 doses of the vaccine.

<sup>11</sup> Tinto H, Otieno W, Gesase S, et al. Long-term incidence of severe malaria following RTS,S/AS01 vaccination in children and infants in Africa: an open-label 3-year extension of a phase 3 randomised controlled trial study. Lancet Infect Dis 2019; published online July 9.

evidence that children who received only 3 doses were at greater risk of severe malaria overall. These findings have allayed previous concern of a potential excess risk for severe malaria in children who did not receive the fourth vaccine dose. The analysis also showed very few cases of severe malaria after the first 4 years of follow-up, in keeping with the natural age pattern of malaria, and no additional imbalance in meningitis. This new information provides reassurance that children who receive only 3 doses benefit overall with respect to clinical malaria, and are not at higher risk of severe malaria than children who do not receive vaccine. With this new information, achieving high coverage of the fourth dose in the pilots is no longer considered essential for a broader WHO policy recommendation. In addition, the potential safety signals identified in the Phase 3 trial<sup>12</sup> have not been observed in pooled analysis of Phase 2 trials<sup>13</sup> and the potential meningitis signal has not been seen in the more than 4000 children who have received RTS,S in ongoing trials in Burkina Faso and Mali.<sup>14</sup> While these data are reassuring, the pilot evaluations and a separate GSK-led Phase 4 study are expected to provide conclusive data on the safety signals.<sup>15</sup> The implementation pilots are also expected to provide evidence on the extent of the added benefit of the fourth dose which could have important implications for the cost/cost-effectiveness of a malaria vaccine programme.<sup>16</sup> Additional information on malaria and RTS,S can be found in Annex B.

- 1.5 In October 2019, WHO convened a Malaria Vaccine Stakeholder Meeting to brief stakeholders on the malaria situation, the latest evidence and data on RTS,S, the potential role of the vaccine to contribute to malaria control and future decisions regarding RTS,S including a broader WHO policy recommendation. In the discussions, African leaders and public health officials emphasised the need for new tools to reduce childhood deaths from malaria in high burden countries, and noted the additional protection which a vaccine could provide given the high coverage and wide reach of

<sup>12</sup> Mendoza YG, Garric E, Leach A, et al. Safety profile of the RTS,S/AS01 malaria vaccine in infants and children: additional data from a phase III randomised controlled trial in sub-Saharan Africa. Hum Vaccin Immunother 2019; published online April 23. DOI:10.1080/21645515.2019.1586040

<sup>13</sup> Vekemans J, Guerra Y, Lievens M, et al. Pooled analysis of safety data from pediatric Phase II RTS,S/AS malaria candidate vaccine trials. Hum Vaccin 2011; 7:1309-16.

<sup>14</sup> The ongoing trial is comparing seasonal vaccination with RTS,S/AS01 and seasonal malaria chemoprevention in highly seasonal areas

<sup>15</sup> The WHO-led pilot evaluation complements GSK-sponsored Phase 4 post-licensure studies which are part of the regulatory approval process.

<sup>16</sup> The final Phase 3 trial results showed a 26% incremental efficacy of the fourth dose against clinical malaria. However, recent modelling by Swiss TPH and Imperial Collect predict small incremental impact of the fourth dose, with over 90% of impact achieved with the administration of the first 3 doses. The recommendation regarding the 4th dose will depend on the size of the benefit. World Health Organization. Proposed Framework for Policy Decision on RTS,S/AS01 Malaria Vaccine. Prepared by the Framework for Policy Decision on RTS,S/AS01 Working Group and the WHO Secretariat. Geneva: World Health Organization, 2019. Available from [https://www.who.int/immunization/sage/meetings/2019/april/1\\_Session\\_7\\_Framework\\_for\\_Policy\\_Decision\\_on\\_RTSS-AS01\\_-\\_MALARIA\\_VACCINE\\_\(for\\_print\).pdf?ua=1](https://www.who.int/immunization/sage/meetings/2019/april/1_Session_7_Framework_for_Policy_Decision_on_RTSS-AS01_-_MALARIA_VACCINE_(for_print).pdf?ua=1)

vaccination compared with other health interventions. Ministry of Health officials noted that there are obstacles to use of insecticide-treated bed nets (ITNs) and other malaria interventions by some populations, and approaches to reducing the malaria burden need to be tailored to local contexts. The discussion also highlighted the need for creative approaches to risk sharing at key stages of development in order to advance malaria vaccine access and avoid market failure for vaccines (or other health products) that are intended exclusively for use in low- and lower-middle income settings. (Further information is provided in Appendix 4)

## 2. Malaria Vaccine Implementation Programme

- 2.1 The Malaria Vaccine Implementation Programme (MVIP) is designed to address the key questions highlighted by SAGE/MPAC in their 2015 policy recommendation. Three pilot countries have been selected: Ghana, Kenya and Malawi. Following preparations for vaccine introductions and evaluation programmes, successful introductions took place in selected areas of the pilot countries between April and September 2019. Further information on the progress of the pilots for the period January – June 2019 is contained in the semi-annual report (see Appendix 2).
- 2.2 In April 2019, SAGE/MPAC endorsed the ‘Framework for WHO Policy Decision on RTS,S’ which lays out a stepwise approach by which MVIP data will be used to inform policy decisions on broader use of RTS,S. First, a policy recommendation could be considered as soon as concerns regarding safety signals are satisfactorily resolved and if data trends in either severe malaria or mortality are consistent with a beneficial impact of the vaccine. This initial recommendation may be available as early as end of 2021. Second, refinements to the policy recommendation could be made on the completion of the pilots in 2023 based on data on the incremental public health value of the fourth dose and the vaccine’s impact on mortality (which was not an endpoint in the Phase III trial). This stepwise approach is intended to enable a policy decision as soon as the risk-benefit can be established and to ensure that, if beneficial, the vaccine would be available immediately to countries wanting to implement it.
- 2.3 The WHO policy decision would inform a future Gavi investment decision regarding whether to support broader use of RTS,S, which would also consider programme feasibility and complementarity with global and domestic investments (particularly the Global Fund). It will be important to establish the cost effectiveness of RTS,S relative to other malaria interventions, to determine the total cost and feasibility of an optimal programme design for RTS,S, and to update projections of financial implications and consider opportunity costs. The investment case for RTS,S would follow the Gavi VIS assessment methodology.

## 3. MVIP funding 2017-2023

- 3.1 While the MVIP is a six-year programme planned to last until 2023, funding was split into two timeframes to align with donor funding cycles.



- 3.2 *2017-2020 funding:* In June 2016 the Gavi Board approved up to US\$ 27.5 million to fund the MVIP from 2017-2020. The final MVIP funding for the 2017-2020 period of US\$ 49.2 million includes both the Gavi contribution (US\$ 24.6 million) and an equivalent amount in combination from the Global Fund and Unitaïd (US\$ 15 million and 9.6 million, respectively).
- 3.3 *2021-2023 funding:* WHO has requested funds totalling US\$ 28.8 million, of which Unitaïd and the Global Fund have committed to fund a combined total of US\$ 11.6 million subject to formal approvals.<sup>17</sup> Based on these commitments, the PPC recommended that, mirroring the previous approach, Gavi contribute US\$ 11.6 million. WHO is identifying additional funding sources for the remaining gap of US\$ 5.6 million. (See Appendix 3).

## **Section C: Long-term Malaria Vaccine Supply**

### **4. Decision on vaccine production and implications**

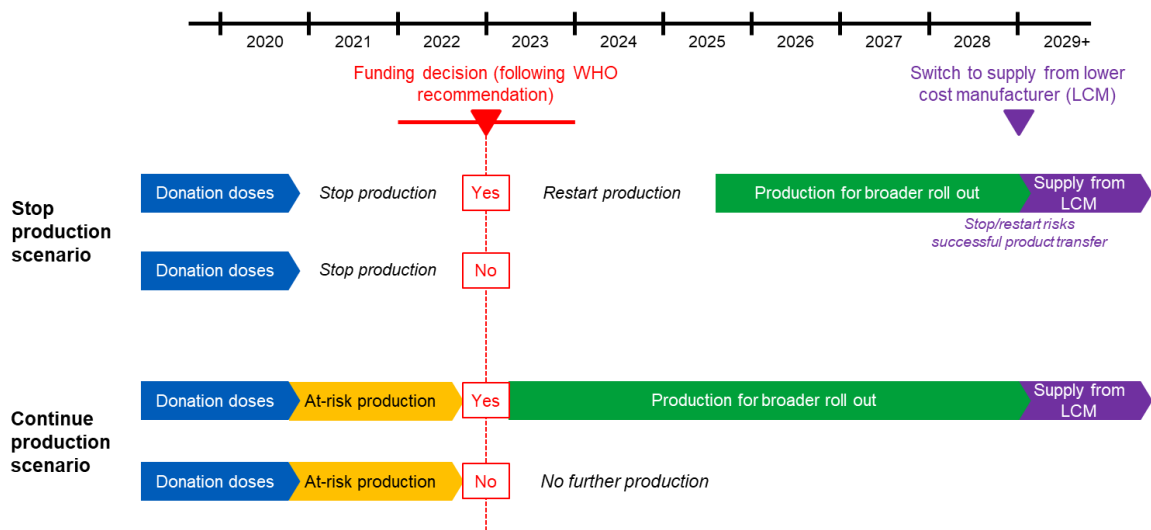
- 4.1 By the end of 2020, GSK will complete manufacturing the RTS,S bulk antigen needed to provide up to 10M donation doses of RTS,S/AS01 for use in the MVIP. In order to produce these, a dedicated manufacturing facility for RTS,S bulk antigen has been recommissioned.
- 4.2 Following a detailed evaluation of options for long-term production, GSK intends to cease manufacture of RTS,S antigen by 2028 and is working with PATH to identify a sustainable manufacturing solution such as a product transfer to a lower-cost manufacturer. GSK will retain control and supply of the AS01 adjuvant component, with AS01 scale-up as appropriate to match future antigen output. Additional external funding from other sources may be needed to support the product transfer and scale-up of adjuvant production beyond current commitments.
- 4.3 Given production planning lead time, GSK intends to decide, preferably by the end of 2019, whether to stop or continue production after the bulk antigen needed for donation doses are produced. The two potential scenarios and their implications are described below:
- a) Stop production: GSK ceases manufacturing following the production of the bulk antigen for the donation doses. In the event of a positive WHO policy recommendation and subsequent Gavi investment decision to support broader roll-out, the facility would need to be restarted. Additional vaccine, beyond the donation doses for the MVIP, would only be available ~3 years from that point. This would result in an up to 3 year halt in use of RTS,S in the pilot areas and would delay further vaccine introductions and uptake beyond pilot countries until at least 2026, reducing health impact. Stopping production also puts at risk successful product transfer; it would send a negative signal to those manufacturers

<sup>17</sup> This represents a reduction of US\$ 6.1 million (17%), following discussion and identification by WHO of efficiencies on the initial budget request of US\$ 34.9 million.

currently considering taking on future vaccine production, and even if a recipient is identified, lack of continuous production at GSK hampers comparability studies and capacity building. Finally, as a result of the production stop/restart and associated costs, this scenario would entail a higher average price (at least 10% higher than in the “continue production” scenario below).

- b) **Continue production:** Uninterrupted production of RTS,S bulk antigen is maintained beyond 2020. In the event of a positive WHO policy recommendation and Gavi investment decision to support broader roll-out, the bulk antigen would be ready to convert to finished doses. This would allow immunisation programmes in pilot countries to continue vaccinating with RTS,S once the donation doses are used up, and potentially to expand to other areas commencing in ~2023, 2-3 years earlier than the “stop production” scenario. As additional countries become ready to introduce, new programmes could start without delay. Approximately 110M doses would be available through 2028, ~130% more than in the stop/start scenario. However, this scenario would require a funder(s) to take on financial risk associated with the production of bulk antigen before the broader policy and investment decisions (“risk share”).

**Figure 1: Indicative timelines for production scenarios**



## 5. Options for Gavi engagement

5.1 Based on the scenarios above, two options for Gavi engagement were presented to the PPC. A third option was identified during the PPC discussion, outlined below. The PPC highlighted the strategic importance of this topic and recommended that the Board discuss the risks and trade-offs associated with all three options.

5.2 **Option 1: no funding guarantee to GSK for continued production of RTS,S bulk antigen following manufacture of donation doses; once**

there is a (positive) WHO policy recommendation Gavi would consider whether to fund broader roll-out. The Alliance would effectively accept the “stop production” scenario and its implications as described above.

**5.3 Option 2: Gavi provides a risk-share with GSK to enable continued production of RTS,S bulk antigen by committing to retrospectively reimburse GSK’s bulk manufacturing costs in the event of a negative WHO policy recommendation or negative Gavi Board decision on funding broader roll-out.**

- a) Should there be a positive WHO recommendation and Gavi decision to fund broader roll-out, Gavi would incur no cost and GSK’s production costs would be recovered, through the procurement of finished doses for broader roll-out (i.e. “regular” vaccine business).
- b) In the event of a negative WHO recommendation or negative Gavi decision to fund broader roll-out, the cost of retroactive reimbursement would be between US\$ 25 and 75 million depending on timing of policy/investment decisions and actual costs incurred by GSK.<sup>18</sup>

**5.4 Option 3: Gavi identifies a third party (or third parties) with which to establish a risk sharing mechanism to enable continued production of RTS,S bulk antigen in advance of a WHO policy recommendation and Gavi Board decision on funding broader RTS,S roll-out.**

- a) The PPC noted the financial risks to Gavi associated with Option 2 and suggested that the Gavi Secretariat could work to identify one or more third parties willing to provide a risk-share by issuing a financial guarantee for GSK’s bulk manufacturing costs between completing the donation doses and Gavi’s decision on broader roll-out. The aim would be to reduce Gavi’s financial exposure to as close to zero as possible and with annual reassessment. This would achieve a similar outcome as Option 2 but would minimise Gavi’s financial exposure.
- b) The Gavi Secretariat has held discussions with several organisations, two of which have signalled their intention to continue engagement. MedAccess<sup>19</sup> has provided an expression of interest (Annex C). Another organisation, which cannot be publicly disclosed at this time, has also submitted a supportive letter which can be shared confidentially with the Board (Annex D)<sup>20</sup> The Secretariat has also been approached by Social Impact Partners, working with MunichRe.

<sup>18</sup> This assumes production and storage of bulk RTS,S antigen only. Filling the vaccine and combining the antigen with AS01 adjuvant are a separate production step that will incur cost, but which are not anticipated until policy/investment decisions (given the 4-year shelf life of bulk antigen). In addition, the MVIP would be monitored such that if there is a negative signal, production could cease.

<sup>19</sup> MedAccess is a wholly-owned subsidiary of CDC Group Plc, and is supported by the UK Department for International Development (DFID). It works in partnership with others, bringing capital and credit risk management skills to wider coalitions led by governments and international agencies. It is an independent, not-for-profit company, governed by an independent Board of Directors.

<sup>20</sup> <https://gavi.boardeffect.co.uk/workrooms/6459/resources/24646>



- 5.5 Should the Board give an approval for either Option 2 or 3, details of the commitment would be worked out with relevant parties and GSK and brought to Gavi's Market-Sensitive Decisions Committee for review and approval (currently targeting end of Q1 2020). Any risk-share mechanism/short-term financial exposure associated with support for continuous production would not pre-empt or influence a Gavi Board decision on supporting broader roll-out of RTS,S.

## 6. Strategic considerations

- 6.1 The different options highlight potential trade-offs between programmatic and financial risks. Not securing continued production after 2020 would delay broader scale-up of RTS,S, compromising momentum for the programme, and disrupting immunisation in the pilot locations already using the vaccine. Further, this option results in a higher average vaccine price and jeopardises longer-term supply by putting at risk the ability to identify a product transfer recipient and successfully transfer the technology. The signal might also negatively impact further R&D investment in vaccines for malaria and other diseases that primarily impact lower income countries.
- 6.2 These risks would be mitigated by Gavi and/or a third party taking on financial liability of up to US\$ 75 million to secure continued production, which could lead to ~40,000 additional lives saved through 2028 and ensures that vaccines would be available for use by countries if of public health value. However, the risk-share would need to be taken with uncertainty regarding future policy and investment decisions. Gavi's share of the financial liability (which would only be incurred in the event of a negative WHO policy recommendation or negative Gavi decision to support broader roll-out<sup>21</sup>) would come from the provision for strategic investments for 2021-2025, meaning that fewer resources would be available for other Gavi 5.0 priority areas.<sup>22</sup> However, a joint funding arrangement (Option 3) could reduce Gavi's exposure whilst securing the public health impact.
- 6.3 Gavi would not typically take on financial exposure in advance of a WHO recommendation or Gavi vaccine investment decision. However, where there is a strong public health rationale and lack of a viable existing mechanism, Gavi has in the past designed and supported bespoke solutions, as was the case for the Advance Purchase Commitment for Ebola vaccine, for example. It is important to note that a decision at this stage would not pre-empt an investment decision to support broader roll-out of RTS,S.
- 6.4 Beyond consideration of a financing mechanism to enable continued bulk antigen production in the near-term, other funding would be required to

<sup>21</sup> In the event of a positive WHO policy recommendation and Gavi decision to support broader roll-out, the guarantee would lapse and no cost would be incurred.

<sup>22</sup> US\$ 500 million for 'Board Strategic Investments' is included in the investment case for the 2021- 2025 period, to provide the Gavi Board flexibility to accelerate new vaccines, respond to situations of fragility, aggressively address pockets of low coverage and swiftly scale up innovations.

support broader use of RTS,S in the future. This includes potential support for product transfer and scale-up of adjuvant production capacity beyond current commitments, as described earlier, as well as support for vaccine procurement and introduction into routine immunisation programmes. Regarding product transfer and adjuvant scale-up, support is being requested from other funders, rather than Gavi; the funding needs are currently being estimated. Regarding support for procurement and operational costs, the Secretariat has estimated potential demand for RTS,S in Gavi-supported countries as part of the VIS 2018 malaria analysis (see Appendix 5), and these projections will continue to be refined based on new information including as part of a future investment case.

- 6.5 Should Gavi decide to support broader roll-out of RTS,S in the future, it would be important to ensure that it is done in manner that does not lead to diversion of domestic resources away from existing malaria interventions, given that RTS,S should be a complementary tool. This is a key topic for Gavi to further explore with other stakeholders and funders in the coming years prior to bringing an investment case.

## **7. Financial implications**

- 7.1 MVIP: The financial implication of Gavi support for the MVIP from 2021- 2023 is US\$ 11.6 million.
- 7.2 Long-term supply of RTS,S: The financial implications vary depending on the option chosen. Option 1 does not have any direct financial implication for Gavi. By supporting Option 2, Gavi would assume financial risk of approximately US\$ 25-75 million. This is the estimated cost to cover the bulk antigen manufacturing and storage (for 1 to 3 years) should broader use of RTS,S not be recommended by WHO and/or a decision is made not to fund broader roll-out of RTS,S, with the range in costs mainly reflecting timing uncertainty of these decision-points. Option 3 would aim to minimise, or bring to zero, Gavi's share of financial risk by identifying a third-party to risk-share.

## **Section C: Actions requested of the Board**

The Gavi Alliance Programme and Policy Committee **recommends** to the Gavi Alliance Board that it:

### **Malaria Vaccine Implementation Programme**

- a) **Approve** an amount up to US\$ 11.6 million to continue the malaria vaccine implementation programme from 2021-2023;

The Gavi Alliance Programme and Policy Committee **recommends** to the Gavi Alliance Board that it:

### **Long-term Malaria Vaccine Supply**

#### **EITHER:**

##### Option 1

- b) **Defer** providing an investment for continued production of RTS,S bulk antigen pending a WHO policy decision and Gavi investment case for broader roll-out;

#### **OR:**

##### Option 2

- c) **Approve** providing an investment for continued production of RTS,S bulk antigen pending a WHO policy decision and Gavi investment case for broader roll-out; and
- d) **Note** that the Market Sensitive Decisions Committee will make a final determination of the structure of the investment.

#### **OR:**

##### Option 3

- e) **Request** the Secretariat to work with stakeholders to identify third-parties to cost share whereby Gavi's financial risk should be minimised or reduced to zero to provide an investment for continued production of RTS,S bulk antigen pending a WHO policy decision and Gavi investment case for broader roll-out; and
- f) **Approve** an investment for continued production of RTS,S bulk antigen between Gavi and third-parties whereby Gavi's financial risk exposure should be minimised as much as possible, with reassessment of support on an annual basis, subject to the final terms being reviewed and endorsed by the Market Sensitive Decisions Committee.

## **Annexes**

**Annex A:** Implications/Anticipated impact

**Annex B:** WHO malaria vaccine brief

**Annex C:** MedAccess Letter of Support

**Annex D:** Third-party Letter of Support (*shared confidentially with the Board*)

## **Additional information available on BoardEffect**

**Appendix 1 (in October 2019 PPC meeting book):** Doc 05 *Malaria Vaccine Pilots and Long-term Supply*

**Appendix 2 (in PPC Library – Additional materials for October 2019 PPC meeting):** Appendix 1 to Doc 05 *Malaria Vaccine Implementation Programme: progress report to funders*

**Appendix 3 (in PPC Library – Additional materials for October 2019 PPC meeting):** Appendix 2 to Doc 05 *Malaria Vaccine Implementation Programme: budget estimate for completion of the programme from 2021-2023*

**Appendix 4:** WHO Malaria Vaccine Stakeholder Meeting Report (October 2019)

**Appendix 5:** Summary Analysis of Malaria for 2018 Vaccine Investment Strategy