

**SUBJECT:** GAVI SUPPORT FOR YELLOW FEVER DIAGNOSTIC CAPACITY

**Agenda item:** 14

**Category:** For Decision

### **Section A: Introduction**

- This report requests the Board to approve funding for strengthening yellow fever diagnostic capacity in Africa, as recommended by the Programme and Policy Committee (PPC) in October 2018. It is proposed that YF diagnostic capacity would be strengthened through a diagnostic procurement mechanism based on Gavi's existing application, review, and approval processes. This investment would facilitate implementation of the Gavi-supported Eliminating YF Epidemics (EYE) strategy and allow more efficient and effective use of vaccine.
- Timely, reliable identification and confirmation of YF allows more rapid containment of outbreaks and better prioritisation of preventive vaccination efforts in the context of the finite YF vaccine supply. As illustrated during YF outbreaks in Angola, the Democratic Republic of Congo (DRC), and Nigeria over the last few years, major gaps in YF diagnostic laboratory capacity exist. A key gap is a lack of validated, commercially available YF diagnostic tests.
- A Gavi Alliance effort to use its market shaping capabilities to improve availability of YF diagnostic tests would be part of a multifaceted approach to improving YF laboratory capacity that would also address: i) the need for laboratory technical assistance, ii) quality assurance/quality control assessments, and iii) solutions to critical sample transportation and laboratory coordination bottlenecks. This approach would be integrated with broader Gavi efforts to improve the availability and quality of immunisation data and strengthen health systems. Efforts to improve YF laboratory capacity would seek to incorporate country co-financing in the medium and long term, and establish the conditions under which Gavi no longer needs to provide funding in order to ensure the sustainability of timely, reliable YF diagnostic capacity.

### **Section B: Facts and Data**

#### **1. Gavi's engagement with yellow fever control**

- 1.1 In 2015, the Gavi Board authorised allocating US\$ 278 million for YF vaccine in the Gavi 2016-2020 budget. In December 2016, the Gavi Board approved an increase in expenditure on YF vaccine of up to US\$ 150 million

during 2017-2020 in support of the EYE strategy, resulting in a potential expenditure of up to US\$ 428 million on YF vaccine during 2016-2020. Neither of these Board decisions included funds to support YF diagnostic or surveillance capacity.<sup>1</sup>

## 2. Role of YF diagnostics and surveillance within EYE strategy

- 2.1 YF clinically resembles many other diseases, including Ebola Viral Disease and viral hepatitis, so laboratory testing is needed to confirm suspected cases of YF. The PPC recommendation reflects the importance of surveillance data incorporating laboratory confirmation of suspected YF cases for effective implementation of the EYE strategy (Appendices 1 and 2). The EYE strategy emphasises using routine immunisation as well as vaccination campaigns to protect at-risk populations from YF, prevent the international spread of YF, and contain outbreaks rapidly. Although progress has been made in improving YF population immunity (Appendix 2), even in a best case scenario all relevant immunity gaps will not be closed until 2024. Surveillance data with laboratory confirmation is needed for decisions about how different immunity gaps should be prioritised for closure through preventive campaigns and countries' introduction of YF vaccine into routine immunisation. Until all such gaps are closed, and even afterwards, it is important to detect YF outbreaks as early as possible so they can be rapidly contained through outbreak response campaigns and international spread can be prevented. Rapid outbreak detection and response can reduce overall death, disease, and disruption from outbreaks as well as the costs and amount of vaccine needed to contain them.
- 2.2 This proposal has the potential to be cost saving for Gavi by allowing YF outbreaks to be detected and contained more quickly and efficiently, an important consideration given Gavi's support for the global YF vaccine stockpile. The spread of a YF outbreak from Angola to the DRC in 2016 illustrates the costs of not containing outbreaks quickly. Gavi's support for the outbreak response in the DRC was Gavi US\$ 13.7 million, and the total costs to the government and other organisations and from economic disruption were significantly higher.
- 2.3 A YF outbreak in Nigeria first detected in 2017 has further demonstrated the importance of timely, reliable laboratory data for targeting use of finite supplies of YF vaccine. Suspected YF cases have been reported throughout Nigeria, and vaccinating all susceptible individuals in Nigeria simultaneously would exhaust available supplies of YF vaccine. Therefore, laboratory testing that can confirm which suspected cases are actually YF is essential for prioritising where and how the vaccine should be used.

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<sup>1</sup> Gavi has provided some funding for YF specific surveillance work as part of Board approved efforts to improve immunisation data. For example, in 2018 approximately US\$ 700,000 were provided for global and regional work while approximately US\$ 37,000 and US\$ 18,000 were provided for work in Tanzania and Sudan, respectively, through the Partners' Engagement Framework.

- 2.4 Although countries in both South America and Africa are at high risk for YF and all countries are eligible to access the Gavi-supported global stockpile, Africa has far more at risk people in need of vaccination and more limitations in diagnostic capacity. Africa is therefore the focus of this proposal.

### **3. Current status of yellow fever laboratory capacity in Africa**

- 3.1 At present, national YF laboratories in Africa frequently experience shortages or stock-outs of reagents (i.e. chemicals) needed to conduct initial tests for YF (Appendix 3). Over a thousand samples from suspected YF cases in 2017 have not been tested at all due to reagent stockouts.
- 3.2 Most national public health laboratories testing for YF in Africa currently need to ship all samples positive on initial testing, and a selection of samples negative on initial testing, to the reference laboratory for the African region, the Institute Pasteur Dakar, for additional testing. The time for completion of confirmatory testing on positive samples currently averages three and a half months, primarily due to the time associated with sample shipment.

### **4. Yellow fever diagnostic tests and procurement**

- 4.1 A recent assessment of the YF diagnostic pipeline and market indicates that no validated commercial YF tests are available on the market (Appendix 4). Therefore, national public health laboratories use in-house testing protocols for initial YF tests and must source and assemble the reagents needed for testing. Testing cannot be completed if a laboratory lacks any needed reagents. Slow procurement processes, shipping logistics, and a lack of funding compound problems with YF test availability.
- 4.2 The Gavi Alliance can help improve the availability of internationally validated or quality assured laboratory tests for YF diagnosis through pooled procurement and market shaping. Interviews with manufacturers indicate that pooled procurement could not only help address problems with the supply, validation, and quality assurance of current tests but also act as a “pull” incentive to encourage the development of new types of tests. “Push” incentives, such as direct subsidies for test development from appropriate donors, could further encourage the availability of improved YF tests.

### **5. Yellow fever public health laboratory capacity strengthening**

- 5.1 Gavi efforts to improve YF diagnostic test availability would be combined with efforts to improve YF laboratory workforce capacity through technical assistance, verify the reliability of laboratories’ results through a quality assurance/quality control program, and address problems with sample transportation. These efforts would draw upon the capabilities and experiences of a range of partners, including but not limited to WHO, the Centers for Disease Control and Prevention (CDC), YF reference laboratories in and outside of Africa, and private sector partners.
- 5.2 Efforts to improve YF diagnostic laboratory capacity would be integrated with broader Gavi efforts to improve the availability and quality of

immunisation data, including support for electronic surveillance data systems. In addition, countries will continue to be able to use HSS funds for general surveillance and laboratory strengthening, complementing efforts to improve YF specific laboratory capacity, if they can show that such investments would play a catalytic role in achieving and maintaining high immunisation coverage and addressing underlying equity challenges.

- 5.3 PPC members agreed that Gavi efforts to improve YF diagnostic test availability would be most effective if combined with efforts to ensure that sufficient funding to support YF diagnostic testing is available in the long-term from national governments. However, multiple PPC members noted that securing such long-term funding from non-Gavi sources would be slow and challenging. Although the expectation will be clearly communicated from the beginning that countries will need to provide funding to support YF diagnostic testing, country co-financing will not be required initially to allow time for discussion, planning and budgeting with national governments.
- 5.4 Donor organisations already engaged in laboratory strengthening activities in Africa, specifically the World Bank, the Bill and Melinda Gates Foundation, CDC, and the NGO Resolve to Save Lives, have confirmed that this proposal will complement, not duplicate, their activities.

## **6. Potential for building on YF diagnostics initiative**

- 6.1 Although the request for funding before the Board is for three years, this effort will be most beneficial if it extends beyond three years. This proposal is only for three years to allow further assessment of the value of the Gavi Alliance addressing limitations in YF laboratory capacity before a longer term commitment is considered.
- 6.2 A concern was raised at the PPC that Gavi support for improving the availability of YF diagnostic tests could lead to subsequent requests for funding to improve the availability of diagnostic tests for other vaccine preventable diseases. The Gavi secretariat noted that the lack of validated diagnostic test options is particularly acute for YF and that there are still YF vaccine supply limitations, and therefore this is less of an issue for other vaccine preventable diseases.
- 6.3 Some PPC members proposed that Gavi could generate a bigger impact by focussing on routine immunisation or contribute to more a holistic approach rather than disease by disease approach for laboratory support alongside WHO and other partners. However, other members acknowledged the benefits of being able to test for and confirm cases of specific diseases as well as a learning agenda in yellow fever and that this could help to inform future WHO and partner work.

## **Section C: Actions requested of the Board<sup>2</sup>**

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

- a) **Approve** an amount of up to US\$ 8.2 million during 2019-2021 (of which US\$ 4.6 million would be for 2019-2020) for costs related to the procurement and distribution of laboratory reagents, supplies, and equipment for yellow fever diagnostic capacity strengthening through a diagnostic procurement mechanism based on Gavi's existing application, review, and approval processes;
- b) **Note** the expected use of Partners' Engagement Framework (PEF) funds, estimated at approximately US\$ 5.3 million during 2019-2021, to support yellow fever diagnostic capacity strengthening; including technical assistance, quality assurance/quality control assessments, support for sample transportation, and coordination. The Gavi Secretariat will seek to absorb the 2019 estimated costs of US\$ 1.7 million within existing approved budgets;
- c) **Note** the continued limited use of health systems strengthening (HSS) funds to support surveillance and laboratory capacity in the context of national plans that focus on achieving and maintaining high immunisation coverage and address underlying equity challenges; and
- d) **Request** the Gavi Secretariat to report back to the PPC and Board on progress in 2019.

## **Annexes**

### **Annex A: Implications**

## **Additional information available on BoardEffect**

**Appendix 1 (in PPC Library – Additional materials for October 2018 PPC meeting):** Appendix 1 to Doc 7 *A Global Strategy to Eliminate Yellow Fever Epidemics (EYE) 2017-2026 – World Health Organization, 2018*

**Appendix 2 (in October 2018 PPC meeting book):** Annex C to Doc 7 *Role of yellow fever diagnostics and surveillance within Ending Yellow Fever Epidemics (EYE) strategy*

**Appendix 3 (in October 2018 PPC meeting book):** Annex D to Doc 7 *Current status and limitations in yellow fever laboratory capacity in Africa*

**Appendix 4 (in PPC Library – Additional materials for October 2018 PPC meeting):** Appendix 2 to Doc 7: *FIND Preliminary Report on Gavi Yellow Fever Diagnostic, Market, Procurement and Regulatory Landscapes*

**Appendix 5 (in October 2018 PPC meeting book):** Annex E to Doc 7 *Potential opportunities for building on yellow fever diagnostics initiative*

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<sup>2</sup> Minority positions on the recommendation were expressed by the PPC members representing the Germany/France/Luxembourg/EC/Ireland and CSO constituencies.