

Participants:

CNBG, Sinovac, Eubiologics, QSMI, Vabiotech, Polyvac, Sinergium, Bio Farma, Bharat, Indian Immunologicals, DCVMN (S. Jarrett, S. Pagliusi, E.J. Hur). Excused: Biovac and Zydus Cadila were unable to connect through Webex due to technical issues. Chair: Ms. Lingjiang Yang, CNBG.

All-day Meeting

S. Jarrett provided an introduction to the main supply chain components that had been identified through a desk review earlier in the year. Based on this review, the results of a DCVMN survey conducted in March 2019 and subsequent interviews with manufacturers were presented. While materials sourcing and manufacturing processes are key to vaccines supply, the Network's activities in supply chain focus on the secondary and tertiary stages of manufacturing (from filling and packaging through to post-marketing surveillance) that are of common interest and can improve vaccine supply to public health programmes. The primary stages of manufacturing (particularly antigen development and manufacture) encompass proprietary methods and confidential data on capacity that are not to be shared among manufacturers, respecting competitive rules.

Regarding the survey which included 36 specific questions on 8 supply chain areas, 43 member companies were invited and 26 responded to it, a 60% participation. Manufacturers were also asked to prioritize the 8 areas identified. In a second step, 18 member companies were invited and 9 agreed to a phone interview, a 50% participation, to validate the survey results and deepen understanding of manufacturers' potential for improving the vaccine supply chain.

Subsequently, the areas of high/low interest to manufacturers were discussed and three areas were prioritized at a meeting of 5-6 manufacturers held on 25th June 2019, in Geneva, namely Traceability, Stockpiling and Innovative packaging/delivery. The DCVMN Supply Chain Working Group should now focus discussions on the challenges within these three priority areas and identify the best practices that can help manufacturers advance together towards improving access to vaccine in developing countries and avoid shortages.

In terms of traceability, DCVMN, in an attempt to prepare members to advance faster, anticipated this trend in supply chain as GS1 presented their work at the DCVMN AGM in 2017, became a resource member in 2018 and provided a training workshop in January 2019, in Shenzhen. In September 2019, Gavi/UNICEF announced the requirement for barcoding standards on secondary and tertiary packaging to supply vaccines to them. Bharat representatives also mentioned new technologies already being implemented in India such as blockchain, to allow UNICEF to track and trace vaccine availability.

Bio Farma shared a presentation of their pilot project building traceability standards through barcoding on primary vaccine packages/vials for national supply in Indonesia. The importance of engaging in early discussion with the respective NRA was stressed. The project also serves to validate the practical feasibility of laser printing and software validation. Practical challenges of labels for serial numbers/data matrix on ampoules, stoppers or bottom of vials were discussed. Two different approaches were identified: open versus closed systems for data sharing and may depend on each company's decision and possibility in its interact with UNICEF supply. It was concluded that the discussions on primary packaging labels appear to be the future for traceability.

S. Jarrett summarized the trends and highlighted the interest in using modeling to understand bar coding feasibility and costs. Participants agreed that considering the benefits of traceability for manufacturers to trace their vaccines (avoiding counterfeiting) to people receiving the vaccines will likely outweigh the costs of investing in this technology/equipment. More detailed information is needed from UNICEF SD, because GS1 has many standards and it is not clear from the announcement which specific format is required. The collaboration with experts from Imperial College London, in the workshop preceding the meeting, may help

manufacturers to better understand and advance in improving supply chain by learning about the key variables for decision-making that may influence performance. S.Jarrett agreed to outline a framework to discuss with experts on how to pursue the modeling. A manufacturer may need to volunteer providing the data needed for piloting the modeling, but results need to be shared openly.

Stockpiling as a second working stream of interest was discussed, noting that shortages are frequent for routine vaccines. As not all manufacturers have all needed information to enable an informed discussion on this subject, it was suggested to collect more information about global and regional stockpiling policies for both creating and financing stockpiles. S.Jarrett will draft a concept note and feedback to the group for further discussion at the appropriate time. It may be helpful to list a few vaccines that could benefit from future stockpiling. The legal framework for that will also be assessed.

Lastly, new packaging/delivery technologies was discussed. In the context of VIPS the question rose as how to cover the costs of innovations. It was agreed to follow the ongoing efforts by other organizations (VIPS, Gavi, CHAI, PATH, etc.) and collect DCVM's views perhaps by a survey. S. Jarrett agreed to summarize the issues facing manufacturers with regard to new packaging innovations.

The Terms of Reference for the WG were shared and discussed. Voluntarily sharing what works best (also what does not work) in supply chain may help advancements in vaccine supply while respecting competitiveness.

Action points:

1. the report on the supply chain survey will be circulated to all participants for perusal and final agreement (by December 10th)
2. expand the WG to include members present at this meeting and share the ToRs with them for comments (by December 10th)
3. S. Jarrett to provide a modeling framework for barcoding down to primary packaging
4. S. Jarrett to provide a summary paper on issues regarding new packaging technologies
5. Clarify with other stakeholders (e.g. VIPS) how to keep all manufacturers abreast of packaging/delivery innovations
6. S.Jarrett to explore information on stockpiling options
7. Schedule a F2F WG meeting around mid-May 2020 to update on traceability and tackle innovations and stockpiling.

Nyon, December 2, 2019

Notes by Sonia Pagliusi and edited by Stephen Jarrett

**Approved: Lingjiang Yang, Chair
Chengdu**



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