Organization and process of the meeting

1. The Pandemic Influenza Preparedness (PIP) Framework Advisory Group (AG) met virtually from 4-8 October 2021. The decision to hold this meeting virtually was due to the continuing COVID-19 pandemic.

2. Two technical briefings were held for the AG on: 1) 22 September 2021, Update on Implementation of the Global Influenza Strategy, 2) 1 October 2021, COVID-19 and Influenza, including influenza virus sharing.

3. A total of 17 AG members participated in the virtual meeting. Between 12 and 17 members participated in each day of the meeting. The list of AG members who participated in the meeting is available at Annex 1.

4. The AG welcomed one new member, Dr Vivi Setiawaty (Indonesia). At the end of the meeting, the AG acknowledged and thanked the five AG members finishing their term with the AG - Dr Hamad El-Turabi (Sudan), Dr Kerri-Ann Jones (United States of America), Associate Professor Raymond LIN Tzer Pin (Singapore), Dr Richard Njouom (Cameroon) and Professor John M Watson (United Kingdom of Great Britain and Northern Ireland).

5. The Chair opened the meeting and welcomed all participants. Declarations of Interest were reviewed by the Secretariat and relevant interests were disclosed. The Statement of Declarations of Interest is available at Annex 2.

6. The agenda of the AG meeting was adopted and is available at Annex 3.

7. The Chair informed the AG that observers from the WHO Global Influenza Surveillance and Response System (GISRS) would attend relevant technical sessions of the AG meeting. GISRS observers included representatives from WHO Collaborating Centres (CC), from an Essential Regulatory Laboratory (ERL), and from National Influenza Centres (NICs).

8. In accordance with its standard practice, the AG convened a consultation with stakeholders on 7 October 2021. The list of participants in the AG meeting and consultation is available at Annex 4.

9. The AG acknowledged the challenges with the virtual meeting format, including the inability to have side-discussions, facilitation of feedback sessions and having sufficient engagement with all stakeholders. Different ideas for improving future consultations, especially when they are on-line, were discussed. A suggestion was made that the Secretariat considers a hybrid approach once in person meetings are re-established.

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1 See https://www.who.int/influenza/gisrs_laboratory/GISRS_representation_20171010.pdf
Implementation of recommendations from the March 2021 meeting

10. As in prior meetings, the AG received and reviewed the Secretariat updates on actions taken based on the recommendations from the last AG meeting in March 2021.

PIP Advisory Group 2020 Annual Report to Director-General

11. The AG’s 2020 Annual Report to the Director-General was published in May 2021 using the concise format developed for the 2018 report. The report was accepted by the Director-General and has been uploaded to the PIP webpage.

Challenges of influenza virus sharing

12. One of the key objectives of the PIP Framework is to improve pandemic influenza preparedness and response by strengthening GISRS.

13. The AG is responsible for monitoring and providing guidance to strengthen the functioning of GISRS. As such, it receives regular briefings on influenza virus sharing activities – both seasonal influenza viruses and influenza viruses with pandemic potential – and considers the impact of challenges to virus sharing when assessing the strength of GISRS.

14. While the scope of the PIP Framework specifically excludes seasonal influenza viruses, all influenza viruses exist in a continuum of virus activity. The sharing of both seasonal and potential pandemic influenza viruses is integral to the functioning of GISRS for global influenza prevention and control. This becomes ever more critical for influenza vaccine production as seasonal influenza vaccine production capacity is directly linked to future pandemic vaccine production capacity.

Sharing of Influenza Viruses with Pandemic Potential (IVPPs)

15. The AG received the regular overview of IVPP sharing over the past six months from the Global Influenza Program. The evidence showed that sharing has continued despite the ongoing pandemic, although at lower numbers to previous years. The AG therefore noted that although seasonal and pandemic virus sharing has been impacted by COVID-19, it has been able to continue.

16. Regarding the ongoing challenges of sharing IVPPs, the Secretariat noted that in some instances, viruses have not been able to be shared or have not been shared on a timely basis with GISRS. The reasons cited for not sharing or late sharing included: the depletion of clinical specimens for confirmatory testing; low viral loads in clinical specimens; transport logistics/travel restrictions; and national requirements for dangerous pathogens.

Sharing of seasonal influenza viruses

17. The Secretariat also briefed the AG on the growing challenges related to seasonal influenza virus sharing. It was noted that GISRS laboratories from all regions had reported instances where seasonal influenza viruses had not been shared on a timely basis. In addition, there were some instances where seasonal influenza candidate vaccine viruses (CVVs) were not able to be used by industry because of uncertainty related to benefit sharing obligations of the country of origin of the CVV.

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2 See https://www.who.int/publications/i/item/9789240024205
18. Issues around seasonal influenza virus sharing have continued to become more complex and time consuming, due in part to the growing number of countries that are implementing national Access and Benefit Sharing (ABS) laws, rules, or regulations, including those implementing the Nagoya Protocol (NP) to the Convention on Biological Diversity (together referred to as “ABS/NP”).

19. The Secretariat reviewed past discussions and recommendation on seasonal influenza and the PIP Framework, including those contained in AG reports and the report of the 2016 PIP Review Group.

20. The Secretariat also shared with the AG a report commissioned by the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) on the *Nagoya Protocol and the WHO Global Influenza Surveillance and Response System – Towards a common approach to Nagoya Compliance*. The report states that there is broad consensus among vaccine manufacturers that legal uncertainty with regards to ABS/NP has had a negative impact on the selection and commercial use of seasonal vaccine viruses, that disruptions of sharing have increased productions timelines and/or the quantity of available vaccines, and that selection of CVVs has been skewed towards those in non-NP countries.

21. The Secretariat provided some context and evidence of recent disruptions to seasonal influenza virus sharing, including ABS/NP data on the status of different CVVs – data that the IFPMA had presented to the recent Southern Hemisphere Vaccine Composition Meeting.

22. A representative of the Office of the Chief Scientist provided an update on implementation of decision WHA72(13), specifically on the request that WHO broaden engagement with Member States, the Secretariat of the Convention on Biological Diversity, relevant international organizations and relevant stakeholders, to provide information on current pathogen-sharing practices and arrangements, the implementation of ABS measures, as well as the potential public health outcomes and other implications. An additional study is currently underway.

Discussion

23. In its deliberations, the AG emphasised that addressing disruptions to seasonal influenza virus sharing is urgent and requires immediate attention.

24. The AG noted that such issues need to be considered within the wider landscape of pandemic preparedness and COVID-19, including on-going initiatives such as the BioHub, Member State discussions on a potential new global instrument for pandemic preparedness and response, and discussions regarding implementation of the Convention on Biological Diversity.

25. The AG discussed three potential options for addressing concerns related to the timely sharing and use of seasonal influenza viruses:

   (a) expand the scope of the PIP Framework to include seasonal influenza viruses;

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3 “The Nagoya Protocol and the WHO Global Influenza Surveillance and Response system: Towards a common approach to Nagoya Compliance” (known as the “Covington report”) aimed to describe the current work processes of GISRS; identify how national ABS/NP laws may affect the sharing of influenza viruses and data within GISRS and suggest potential solutions through interviews with stakeholders with and within GISRS on the development of seasonal influenza vaccines.
(b) recognise GISRS as a specialized international ABS instrument (SII) within the meaning of Article 4(4) of the NP; and

c) revise the WHO GISRS Terms of Reference for National Influenza Centres (NICs) to clearly specify use of the viruses by industry for vaccine production, and use the Seasonal Influenza Material Transfer Agreement (SIMTA) on a more systematic basis.

26. The AG noted that the three options are not mutually exclusive and could be worked on in parallel. Options 1 and 2 would be longer-term solutions that would require thorough and careful consideration by WHO of their potential implications. All three options would require Member States’ consideration – either through the Health Assembly or by all countries that have a NIC. The AG stressed that any solution must address benefit sharing.

27. The objective of all three options is to strengthen global pandemic influenza preparedness by strengthening the effectiveness of seasonal influenza virus sharing. The AG briefly discussed the options, recognizing that benefit sharing is the central issue in considering all three options. Current mechanisms of the PIP Framework could be adapted to address seasonal influenza virus sharing, with additional approaches also considered.

28. The AG noted that there are workload considerations in all options. Using the IVTM to track seasonal influenza viruses would significantly increase the workload of GISRS, while not tracking the use of seasonal influenza virus could make adequate benefit sharing challenging.

29. The AG considered that Option 2 is dependent on the defining of criteria for recognition of an SII and that the recognition of GISRS as an SII would need to be established under the authority of the NP governing body, or another authoritative body such as the World Health Assembly. The AG noted that in most cases, non-health ministries are the competent national authority for the Convention on Biological Diversity and that this needs to be considered.

30. The AG agreed that Option 3 could be implemented as an interim technical solution to address the urgent issue, while other solutions are explored and/or pursued. While revised NIC TORs could provide clarity at the point in time when viruses are shared, revision of the TORs would require significant workload and could be complicated. Some of the processes and the benefit sharing arrangements might need revisions, and in some countries, modifying the NIC TORs could result in the slowing of virus sharing as the relevant government entities review its implications.

31. Finally, the AG noted that their previous recommendation against including seasonal viruses in the scope of the PIP Framework needs to be reconsidered due to the new data presented and their growing concern over the impact of disruptions to seasonal influenza virus sharing on GISRS and pandemic influenza preparedness. Due to the virtual meeting format, and the truncated nature of the meeting, the AG recognized that this discussion needed further time and attention.4

32. The AG concluded that further consideration of the implications and feasibility of pursuing one or more of these options is urgently required given the present and growing threat to GISRS as underscored by the increasing body of evidence.

4 In the weeks following the meeting, further informal consultation was held on the issue of seasonal influenza virus sharing to determine an appropriate way forward. The AG decided to establish a working group to further explore the options presented during the meeting, with a view to developing a report for the Director-General’s consideration.
Recommendation to the Director-General
The AG recommends that the Director-General use the opportunity of Executive Board EB150 (January 2022) to inform MS about the continued disruptions and challenges to seasonal influenza virus sharing.

Q&As with GSIRS representatives
33. The AG and GISRS representatives discussed the proposed enhancement of GSIRS to include other respiratory viruses with epidemic and pandemic potential. Whilst acknowledging that GISRS is a successful model for global influenza surveillance and response and that its expansion seems inevitable, any expansion will require careful consideration of the global surveillance and response needs of the other respiratory pathogens and that it does not jeopardise influenza surveillance.

SMTA2 update
34. The Secretariat informed the AG that SMTA2 negotiations are ongoing with several influenza vaccine manufacturers and that the Secretariat is also negotiating an SMTA2-like agreement with an influenza antiviral manufacturer to replace their existing time limited supply arrangement.

35. Of the 16 SMTA2s signed with influenza product manufacturers, 11 should undergo the 4-year review process. One revised agreement based the review with an early SMTA2 signatory is being finalized, while the remainder of reviews have been postponed due to the pandemic and in anticipation of finalizing the SMTA2 deployment terms review. Two meetings to progress the SMTA2 Deployment Terms Review have been held with industry.

36. The Secretariat has progressed its efforts to engage with the diagnostic sector, including by conducting a briefing session for AdvaMedDX and its member manufacturers. Feedback from this session and other follow up meetings highlight two main reasons why diagnostic manufacturers are not participating in the PIP Framework: 1) they do not recognize when they are using GISRS and 2) they are not aware of the benefit of using GISRS.

37. The AG noted that during the H1N1 pandemic the use of commercial diagnostic kits had been limited, but that the role of commercial diagnostics has changed significantly since then. The COVID-19 response has highlighted in particular the important role of diagnostic testing throughout all phases of the pandemic. It is important to include the diagnostic sector under the PIP Framework, but the history as well as lack of understanding by this sector about the PIP Framework has led to systemic and ongoing issues in terms of participating in the Partnership Contribution and concluding SMTA2s.

38. Recognizing the importance of the diagnostic sector to pandemic influenza preparedness and response and the increasing growth of this sector in the influenza space, the AG will develop a way forward to approach and better engage this sector under the PIP Framework. To do so, the AG will establish a small working group that will focus on identifying fair, equitable and pragmatic benefits from this sector as well as review whether GISRS could provide more targeted services for diagnostic development and validation. The AG suggests that the group should be composed of AG members and that the working group’s method of work include consultation with representatives from the diagnostic sector and GISRS with a view to getting views and input to possible solutions.

Update on options to increase access to pandemic influenza vaccines
39. The Secretariat updated the AG on their work to explore options to increase access to future pandemic influenza vaccines, by engaging with manufacturers that use new technologies for influenza vaccine development. This work builds on the lessons learned from the COVID-19 pandemic, which showed how critical it is to secure access to those rapidly produced vaccines, that do not necessarily require access to the physical virus in their development.

40. Recognising the critical need to have advance supply agreements in place for a more rapid and equitable access to pandemic vaccine, the Secretariat further explored the sections of the PIP Framework that could allow and support approaching certain manufacturers to request conclusion of an advance supply agreement with WHO, on a voluntary basis. The suggestion is to rely on a specific provision of the Framework, which urges vaccine manufacturers to set aside a portion of each production cycle of pandemic vaccine for use by developing countries. This provision can provide a basis to approach companies that could produce pandemic influenza vaccine, to engage in some benefit-sharing, regardless of the technology being used. The Secretariat will continue to explore flexibilities under the PIP Framework to increase access to future pandemic influenza vaccine.

**Update on Partnership Contribution (PC) – High Level Implementation Plan (HLIP-II) Implementation & Mid-Term Review**

41. The Secretariat presented the status of Partnership Contribution implementation from 2018 to 2021. The PIP Framework 18-month period progress report 1 January 2020 - 30 June 2021, the Mid-term review of the PC Preparedness High-Level Implementation Plan II and the meeting report of the PC Independent Technical Expert Mechanism (PCITEM) were provided to the AG.

42. The Secretariat reported to the AG that as of 15 September 2021, the 2020 and 2021 PC collection are 66 and 47 percent respectively of the invoiced amount of US$ 28 million per year. For the 18-month period of the PIP Framework progress report, implementation at 38% was less than the previous biennium due to lower activity costs (travel, face-to-face meetings, staff costs) associated with the shift of attention to COVID-19. The impact on technical implementation was carefully monitored and was not affected.

43. The Secretariat summarised the six recommendations from the mid-term review and the AG welcomed the update on how these recommendations have been addressed. The AG endorsed the timing of the HLIP II independent evaluation for 2023.

44. The Secretariat summarised the operational planning for HLIP II for 2022-2023 Biennium, and that the 56 country, regional and global work plans were reviewed by the PCITEM. The workplans comprise agile and flexible implementation to adapt to the evolving COVID-19 pandemic and will be submitted for approved by November 2021 for timely implementation in January 2022.

**Proportional division for pandemic preparedness and response**

45. The Secretariat prefaced that in 2022 the AG is due to review the proportional division of PIP Framework funds between pandemic preparedness measures and response activities. The history of the proportional division and the guiding principles for using PIP Framework funds was provided as background for discussion at the March 2022 AG meeting. The AG requested that the Secretariat provide information on the use of emergency funding made available during the COVID pandemic to assist with this discussion.
Consultation with Stakeholders
46. The Chair welcomed stakeholders, thanked them for ongoing contributions, and provided a brief update on the AG’s work. The Director of WHO’s Global Infectious Hazards (GIH) Department presented an update the broader global work on pandemic preparedness in the context of the COVID-19 response.

47. Representatives from the IFPMA and Biotechnology Industry Organization (BIO), in their presentation to the AG, queried whether the expansion of GISRS+ would impact influenza surveillance, updated the AG on their revised PC formula and possible implementation for 2022, confirmed their concern about the importance of rapid access to influenza viruses in the context of the NP and expressed interest in providing feedback during the HLIP II evaluation.

48. The Secretariat provided a presentation which covered: PC collection and proportional distribution of funds, the HLIP II implementation progress (including regional reports from the Regional Office for Africa and the Regional Office for the Americas and on the burden of disease studies), the HLIP II mid-term review, SMTA2 update and celebrations to mark the ten-year anniversary of PIP.

49. During the session, the following was discussed:

   (a) Stakeholders inquired about the status of the PC formula proposed by Industry and requested to receive a presentation from IFPMA and BIO at the next meeting.
   (b) On the matter of seasonal influenza virus sharing, some stakeholders remarked that the PIP Framework benefit sharing mechanisms have given countries confidence to share IVPPs but that the same assurances of equitable benefit sharing are required for sharing seasonal influenza viruses.
   (c) That seasonal influenza vaccination programmes form part of the pandemic influenza preparedness pathway.
   (d) That the HLIP-II evaluation be conducted as an impact evaluation.

Next steps
50. The next PIP Advisory Group meeting will be held the week of 14 March 2022.
Annex 1

Meeting of the Pandemic Influenza Preparedness Framework Advisory Group
4-8 October 2021

List of Advisory Group participants

Dr Roberto Eduardo Arroba, Tijerino, Ministerio de Salud, Costa Rica

Dr Kedar Prasad Baral, Professor of Public Health, Patan Academy of Health Sciences, Nepal

Dr Sulaiman Al Busaidi, Former Director, Central Public Health Laboratory, Ministry of Health, Oman

Dr Hamad El-Turabi (Vice-Chair), Associate Professor of Medicine/Consultant Physician and Pulmonologist, Soba University Hospital, University of Khartoum, Sudan

Dr Elizabeth Ferdinand, Former Chief Medical Officer (a.i.), Ministry of Health, Barbados

Dr Kerri-Ann Jones, Former Vice President, Research and Science, The Pew Charitable Trusts; former Assistant Secretary, State Department, United States of America.

Dr Mohammad-Mehdi Gouya, Assistant Professor, Faculty of Medicine, Iran University of Medical Sciences, Director General of Centre for Disease Control, Ministry of Health and Medical Education, Islamic Republic of Iran

Associate Professor Raymond LIN Tzer Pin (Chair), Director, National Public Health Laboratory, National Centre for Infectious Diseases, Singapore

Dr Heidi Meyer, Head of Section, International Coordination / Regulatory Service, Paul-Ehrlich-Institut, Germany

Dr Mbayame Ndiaye Niang, former Director of the National Influenza Center at Pasteur institute of Dakar, Senegal

Dr Richard Njouom, Head, Virology Department, Centre Pasteur of Cameroon, Cameroon

Professor Soe Lwin Nyein, Department of Public Health, Ministry of Health and Sports, Myanmar

Professor Lokman Hakim Bin Sulaiman, Professor of Public Health, International Medical University, Malaysia

Dr Vivi Setiawaty, Center for Research and Development of Biomedical and Basic Health Technology, Ministry of Health, Indonesia

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1 Dr Jane Ruth Aceng (Uganda) was unable to attend.
Dr Enrique Tayag, Department of Health, Philippines

Dr Liana Torosyan, Former Head, Department of Epidemiology of Infectious Diseases, National Center of Disease Control and Prevention, Ministry of Health, Armenia

Professor John M. Watson, Former Deputy Chief Medical Officer for England, Department of Health, United Kingdom of Great Britain and Northern Ireland
Annex 2

Meeting of the Pandemic Influenza Preparedness Advisory Group
4-8 October 2021

Summary of Declarations of Interests by members

In accordance with WHO policy, in advance of the meeting, all PIP Framework Advisory Group members were asked to provide a duly completed Declaration of Interests form to inform WHO about real, potential or actual conflicts of interests that they might have in relation to the subject matter of the meeting. Over the course of the meeting, the Advisory Group discussed, reviewed, or was provided updates on implementation of the Framework, including: a) virus sharing; b) Standard Material Transfer Agreement 2, and c) Partnership Contribution implementation.

During the meeting, the Advisory Group also interacted with manufacturers and other stakeholders regarding the implementation of the PIP Framework.

Members, in the exercise of their functions on the Advisory Group, serve in their individual capacity acting as international experts serving WHO exclusively. The experts participating in the Advisory Group meeting were, by WHO region:

Africa
- Dr Richard Njouom (Cameroon)
- Dr Mbayame Ndiaye Niang (Senegal)

Americas
- Dr Elizabeth Ferdinand (Barbados)
- Dr Kerri-Ann Jones (United States of America)
- Dr Roberto Eduardo Arroba Tijerino (Costa Rica)

Eastern Mediterranean
- Dr Sulaiman Al-Busaidi (Oman)
- Professor Hamad El-Turabi (Sudan)
- Dr Mohammad Mehdi Gouya (Islamic Republic of Iran)

Europe
- Dr Heidi Meyer (Germany)
- Dr Liana Torosyan (Armenia)
- Professor John Watson (United Kingdom of Great Britain and Northern Ireland)

South-East Asia
- Dr Kedar Baral (Nepal)
- Dr Soe Lwin Nyein (Myanmar)
- Dr Vivi Setiawaty (Indonesia)

Western Pacific

1 Dr Jane Ruth Aceng (Uganda), was unable to attend.
Given that discussions in the meeting were on the use or allocation of Partnership Contribution resources, and in the interest of transparency, the following interests and/or affiliations are relevant to the subject of work and are hereby disclosed:

<table>
<thead>
<tr>
<th>Name</th>
<th>Interest declared</th>
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<tbody>
<tr>
<td>Dr Elizabeth Ferdinand</td>
<td>Former Civil Servant</td>
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<tr>
<td>Dr Sulaiman Al-Busaidi</td>
<td>Former Civil Servant</td>
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<tr>
<td>Professor Raymond LIN Tzer Pin</td>
<td>Affiliated with a GISRS laboratory</td>
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<td>Civil Servant</td>
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<tr>
<td>Dr Roberto Arroba</td>
<td>Civil Servant</td>
</tr>
<tr>
<td>Dr Soe Lwin Nyein (Myanmar)</td>
<td>Civil Servant</td>
</tr>
<tr>
<td>Dr Liana Torosyan</td>
<td>Civil Servant</td>
</tr>
<tr>
<td>Professor John Watson</td>
<td>Former Civil Servant</td>
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</tbody>
</table>

No comments were received as a result of the Public Notice and Comment period. No other interests declared by members of the Advisory Group were deemed relevant to the work of the group. In consultation with the Compliance and Risk Management and Ethics unit, it was determined that there is no conflict in respect of these members.
Meeting of the Pandemic Influenza Preparedness Framework Advisory Group
4-8 October 2021
Agenda

1. Welcome remarks
2. Declarations of Interest
3. Adoption of agenda
4. Challenges of influenza virus sharing
5. Public Health Implications of Implementation of the Nagoya Protocol
6. Influenza Virus Sharing
7. SMTA2 update
8. Update on Genetic Sequence Data
9. Update on Partnership Contribution – HLIP-II Implementation & Mid-Term Review
10. Proportional division for pandemic preparedness and response
11. Advisory Group consultation with industry and other stakeholders
   • Updates from Secretariat on PIP Framework implementation
   • Presentations from stakeholders
12. Development of recommendations to the Director-General and Meeting Report
13. Next steps
   • Next meeting of the Advisory Group
   • Any other business
14. Close of meeting
Meeting of the Pandemic Influenza Preparedness Framework Advisory Group
4-8 October 2021

List of Participants

GISRS representatives\textsuperscript{1,2}

- Héctor Chiparelli, Jefe de Unidad de Virología, Depto. de Laboratorios de Salud Pública, Montevideo, Uruguay
- Othmar Engelhardt, Principal Scientist, Division of Virology, National Institute for Biological Standards and Control, Blanche Lane, United Kingdom
- Summer Galloway, WHO Collaborating Centre for Surveillance, Epidemiology and Control of Influenza, US Centers for Disease Control and Prevention, United States of America
- Olav Hungnes, Director, National Influenza Centre, Norwegian Institute of Public Health, Norway
- Ann Moen, Influenza Division, US Centers for Disease Control and Prevention, United States of America

Civil society organizations\textsuperscript{3}

- Luis Gil Abinader, Knowledge Ecology International (KEI)
- Edward Hammond, Third World Network (TWN)
- James Love, Knowledge Ecology International (KEI)
- Caline Mattar, World Medical Association
- Pierre du Plessis, African Union Continental Coordinating Committee on Biodiversity, Biosafety and ABS
- Sangeeta Shashikant, Third World Network (TWN)
- Thirukumaran Balasubramaniam, KEI

Manufacturers and industry associations\textsuperscript{2}

- Paula Barbosa, International Federation of Pharmaceutical Manufacturers & Associations (IFPMA)
- Phyllis Arthur, Biotechnology Innovation Organization (BIO)
- Joel Straus, Biotechnology Innovation Organization (BIO)
- Nuphar Rozen-Adler, BD
- Lily Li, Ortho Clinical Diagnostics
- Sandra Perreand, Biomerieux
- Danelle Miller, F. Hoffmann-La Roche Ltd
- Bradford Spring, BD
- Anton Efimov, Petrovax
- Masayuki Imagawa, Takeda
- Jinchang Wu, Changchun BCHT Biotechnology Co.
- Erica Dueger, Sanofi Pasteur
- Duong Huu Thai, IVAC
- Le Van Be, IVAC

\textsuperscript{1} Participated in relevant technical sessions of the meeting.
\textsuperscript{2} Participated in the 7 October 2021 consultation with stakeholders
• Li Yansonghe, Sinopharm
• Pham Thi Bich Hong, IVAC
• Vita Shcherbinina, Petrovax
• Anna Galchenko, Petrovax
• Alina Popova, Petrovax
• Paul Contestable, Ortho Clinical Diagnostics
• Samir Desai, Cadila Healthcare Limited
• Sogo Yamamoto, Daichi Sankyo
• Mikyung Kim, SK Bioscience
• Nicolas Petit, Medicago
• Tharini Sathiamoorthy, Cepheid
• Hong Pham, IVAC
• Malikova Elizaveta, Petrovax
• Harshet Jain, Panacea Biotech
• Fernando Lobos, Sinergium Biotech S.A.
• Sonia Pagliusi, The Developing Countries Vaccine Manufacturers Network (DCVMN)
• Rajinder Kumar Suri, The Developing Countries Vaccine Manufacturers Network (DCVMN)
• John Billington, GlaxoSmithKline (GSK)
• Kelly Cappio, Novavax, Inc
• Felipe Altarejo Carvilhe, Instituto Butantan
• Antonio Cesar Pereira da Silva, Instituto Butantan
• Tiago Rocca, Instituto Butantan
• Ricardo Oliveira, Instituto Butantan
• Leon de Waal, Viroclinics Biosciences B.V., Viroclinics Xplore
• Parichat Duangkhae, Government Pharmaceutical Organization (GPO)
• Nuphar ROZEN-ADLER
• Melchior Kuo, International Federation of Pharmaceutical Manufacturers & Associations (IFPMA)
• Sam Lee, Sanofi Pasteur
• of Shuang Li, Changchun Institute Biological Products Co., Ltd.
• Meei-Yun Lin, Medigen
• Caroline Mendy, F. Hoffmann-La Roche Ltd.
• Lyn Morgan, Sanofi Pasteur
• Débora Botéquio Moretti, Instituto Butantan
• Ricardo Oliveira, Butantan
• Cristiano Goncalves Pereire, Instituto Butantan
• Sonia Pagliusi, The Developing Countries Vaccine Manufacturers Network (DCVMN)
• Ricardo Palacios, Instituto Butantan
• Lauren Parker, AstraZeneca
• Monika Puri, F. Hoffmann-La Roche Ltd.
• Beverly Taylor, Seqirus Vaccines
• Sha Ti, Shanghai Institute of Biological Products Co., Ltd.
• Paul Torkehagen, Medigen Vaccine Biologics Corp.
• Ted Tsai, Takeda
• Susan Van Meter, AdvaMedDx
• Han van den Bosch, Medigen
• Yehong Wu, Changchun Institute of Biological Products Co., Ltd.

Databases
• Philippe Le Mercier, Swiss Institute of Bioinformatics
• Céline Gurry, GISAID Initiative

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• Belinda Herring, AF/RGO/WHE/IHM
• Ambrose Otau Talisuna, AF/RGO/WHE/IHM

AMRO
• Angella Smith, AM/PAHO
• Andrea Vicari, AM/PAHO

EMRO
• Abdinasir Abubakar, EM/RGO/WHE/IHM
• Amgad Elkholy, EM/RGO/WHE/IHM
• Wasiq Khan, EM/RGO/WHE/IHM
• Ruba Kawafha, EM/RGO/WHE/IHM
• Eman Omran, EM/RGO/WHE/IHM
• Hala Abou-Elnaja, EM/RGO/WHE/IHM

EURO
• Michala Hegermann-Lindencrone, EU/RGO/WHE/IHM
• Richard Pebody, EU/RGO/WHE/IHM

SEARO
• Supriya Bezbaruah, SE/RGO/WHE
• Francis Inbanathan, SE/RGO/WHE/IHM
• Pushpa Wijesinghe, SE/RGO/WHE/IHM

WPRO
• Phuong Nam Nguyen, WPR/RGO/WHE
• Tamano Matsui, WPR/RGO/WHE

WHO headquarters
• Esther Awit, HQ/WPE/GIH/PIP
• Jennifer Barragan, HQ/WPE/GIH/PIP
• Luisa Belloni, HQ/WPE/GIH/PIP
• Isabel Bergeri, HQ/WPE/GIH/GIP
• Sylvie Briand, HQ/WPE/GIH
• Christopher Chadwick, HQ/WPE/GIH/IPR
• Hitesh Chugh, HQ/WPE/GIH/PIP
• Katherine Deland, HQ/SCI/RFH

3 Participated in some or all of the meeting.
• Chadi Fayad, HQ/WPE/GIH/IPR
• Julia Fitzner, HQ/WPE/GIH/GIP
• Ioana Ghiga, HQ/WPE/GIH/IEP
• Shoshanna Goldin, HQ/WPE/GIH/IPR
• Sarah Hamid, HQ/WPE/GIH/GIP
• Aspen Hammond, HQ/WPE/GIH/GIP
• Sarah Hess, HQ/WPE/GIH/IEP
• Poonam Huria, HQ/WPE/GIH/PIP
• Anne Huvos, HQ/WPE/GIH/PIP
• Sandra Jackson, HQ/WPE/GIH/GIP
• Sasha Kontic, HQ/WPE/GIH/PIP
• Maja Lievre, HQ/WPE/GIH/GIP
• Alaa Magdy, HQ/MHP/RPQ/REG/RSS
• Bikram Maharjan, HQ/WPE/GIH/GIP
• Claudia Nannini, HQ/DGO/DGD/LEG/GBI
• Tim Nguyen, HQ/WPE/GIH/IEP
• Razieh Ostad, HQ/MHP/RPQ/REG/RSS
• Dmitriy Pereyaslov, HQ/WPE/GIH/GIP
• Awandha Raspati Mamahit, HQ/WPE/GIH/GIP
• Magdi Samaan, HQ/WPE/GIH/GIP
• Gina Samaan, HQ/WPE/GIH/PIP
• Siddhivinayak Shriram Hirve, HQ/WPE/GIH/GIP
• Hiiti Sillo, HQ/MHP/RPQ/REG/RSS
• Steve Solomon, HQ/DGO/DGD/LEG/GBI
• Katelijn Vandemaele, HQ/WPE/GIH/GIP
• Wenqing Zhang, HQ/WPE/GIH/GIP