International Coordinating Group on vaccine provision for epidemic meningitis

Report of the annual meeting

22 September 2021
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<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>CFR</td>
<td>case fatality rate</td>
</tr>
<tr>
<td>Gavi</td>
<td>Gavi, the Vaccine Alliance</td>
</tr>
<tr>
<td>ICG</td>
<td>International Coordinating Group</td>
</tr>
<tr>
<td>IFRC</td>
<td>International Federation of Red Cross and Red Crescent Societies</td>
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<tr>
<td>Nm</td>
<td><em>Neisseria meningitidis</em></td>
</tr>
<tr>
<td>Nm-A</td>
<td><em>Neisseria meningitidis</em> serogroup A</td>
</tr>
<tr>
<td>SD</td>
<td>Supply Division (of UNICEF)</td>
</tr>
<tr>
<td>SII</td>
<td>Serum Institute of India</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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1. Introduction

The International Coordinating Group (ICG) on vaccine provision for epidemic meningitis was formed in 1997 after a large-scale epidemic caused by Neisseria meningitidis (Nm) serogroup A (Nm-A) that resulted in over 20,000 deaths across the meningitis belt of Sahelian West Africa. The ICG acts as a global mechanism for allocation of vaccines from global stockpiles to respond to emergency requests for outbreaks of major infectious diseases. In addition to vaccines, the ICG for meningitis maintains a stockpile of ceftriaxone for management of meningitis cases. Stockpiled meningococcal vaccine doses nearing expiration are repurposed for preventive campaigns in countries at high risk of outbreaks.

The four founding agencies of the ICG are: the International Federation of Red Cross and Red Crescent Societies (IFRC), Médecins Sans Frontières, the United Nations Children’s Fund (UNICEF) and the World Health Organization (WHO). It consults many partners, including technical experts and vaccine suppliers. Gavi, the Vaccine Alliance, is the principal funder of the meningitis vaccine stockpile. In performing its mandate, the ICG pursues its guiding principles of ensuring equitable, timely access to essential vaccines while maintaining its independence of decision-making based on objective assessment of scientific evidence.

The objectives of the ICG are to:
- allocate vaccine equitably by careful, objective assessment of risk based on epidemiological and operational criteria;
- deliver vaccines rapidly in response to infectious disease outbreaks;
- coordinate deployment of limited quantities of vaccines and other essential medicines;
- minimize wastage of vaccines and other supplies;
- advocate for readily available, low-cost vaccines and medicines;
- work with manufacturers through UNICEF and WHO to guarantee the availability of emergency stocks of vaccine; and
- follow standard operating procedures and establish financial mechanisms to purchase emergency vaccine supplies and ensure the sustainability of stocks.

The 2021 annual meeting of the ICG on provision of meningococcal vaccines was held remotely on 22 September 2021. The participants included representatives of WHO headquarters, including the ICG Secretariat, the WHO Regional Office for Africa, UNICEF, with participants from both the Programme Group and the Supply Division (SD), Médecins Sans Frontières, the IFRC and Gavi. Representatives of vaccine manufacturers were also in attendance.

The objectives of the meeting were to:
- review the epidemiological situation of meningitis in 2021;
- review the outbreaks and campaigns supported by ICG during 2021;
- discuss meningitis vaccine demand in 2021 and supply forecasts;
- discuss manufacturers’ production plans and future vaccine developments; and
- decide on the size and composition of the meningitis vaccine stockpile for 2022.
2. Epidemiological update 2021

Overall, there was a significant decrease in the number of meningitis cases reported annually and in the case fatality rate (CFR) among confirmed cases in the WHO African Region since introduction of the MenAfriVac Nm-A conjugate vaccine in 2010. In addition, near elimination of Nm outbreaks was achieved across West Africa. Nonetheless, the unpredictability of which Nm serogroups will emerge in which locations and the potential impact of climate change on the distribution of outbreaks continue to pose significant challenges.

The numbers of cases and outbreaks reported in 2021 and the number of emergency vaccine requests to the ICG were lower than in most years before 2020. Although this may represent the cyclical nature of meningitis outbreaks on the African continent, it may also be attributable to measures adopted in a number of countries in response to the global COVID-19 pandemic.

During January–September 2021, approximately 8750 suspected cases and 410 deaths attributable to meningococcal meningitis were reported in 20 African countries. Pathogens that cause meningitis were detected in 875 of the 4039 cerebrospinal fluid samples submitted for testing by 11 countries (positivity rate, 21.7%). The main pathogens were Nm-C (54.5%), Streptococcus pneumoniae (28.8%), Nm-X (8.3%) and Nm-W (3.4%). Nm-A has not been detected in cerebrospinal fluid samples since 2017.

Between 2020 and 2021, the proportion of samples containing Nm-C increased from 5.3% to 54.5%. Although the proportion containing S. pneumoniae decreased from 46.3%, it was present in all samples from Togo in 2021 and in most samples from Chad, Guinea and Mali. All samples from the Democratic Republic of the Congo and Senegal in 2021 contained Nm-W, although it is uncertain whether the samples represent all cases in those countries during 2021.

A significant outbreak occurred in Benin in March 2021 in Tanguïéta district in the Atacora region and also in areas in the districts of Materi and Coby, the number of cases rising to over 40 per week. After enhancement of surveillance, reporting and case management in the region, Nm-C and Nm-W were the main pathogens detected. In Ghana, an outbreak occurred in Nandom district in the country’s Upper West Region. The epidemic threshold was first crossed in January 2021, and, as of 29 August 2021, a total of 170 cases and one death had been reported (CFR, 0.6%). The predominant pathogen was S. pneumoniae. In Niger, an outbreak started in January 2021 in two districts of the Zinder region and later in Say district in Tillabéri region, where Nm-C was identified as the main pathogen.

At the time of the ICG meeting, an outbreak was ongoing in Banalia health zone, Tshopo Province, in the Democratic Republic of the Congo, with 695 cases and 166 deaths (CFR, 23.9%). The outbreak occurred in a remote area known for gold and diamond mining with a high population density and precarious living conditions. Nm-W was identified as the causative pathogen; while the outbreak started around July 2021, the first case was confirmed on 7 September 2021, outside the usual epidemic season.
3. International Coordinating Group response and performance outcomes in 2021

Requests and vaccination campaigns, 2021 epidemic season

Table 1 summarizes the requests for meningococcal vaccines made to the ICG during the 2021 epidemic season. During this period, the ICG received three emergency requests for meningococcal vaccines from three countries for a total of 686,742 vaccine doses. All three requests were approved, of which two were partially and one fully approved. A total of 642,122 doses were approved for use in emergency response.

Table 1. Emergency requests to the International Coordinating Group for meningococcal vaccines in 2021

<table>
<thead>
<tr>
<th>Country</th>
<th>Request date (2021)</th>
<th>No. of days for circulation of request</th>
<th>No. of days for additional information</th>
<th>No. of working days for decision</th>
<th>Approval</th>
<th>No. of days to delivery</th>
<th>No. of days to start of campaign</th>
<th>No. of vaccine doses requested</th>
<th>No. of vaccine doses approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Niger</td>
<td>24/02</td>
<td>Same day</td>
<td>6</td>
<td>1</td>
<td>Partial</td>
<td>18</td>
<td>6</td>
<td>259,625</td>
<td>194,340b</td>
</tr>
<tr>
<td>Benin</td>
<td>26/03</td>
<td>Same day</td>
<td>5</td>
<td>1</td>
<td>Full</td>
<td>13</td>
<td>19</td>
<td>182,561</td>
<td>260,322c</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>16/09</td>
<td>Same day</td>
<td>N/A</td>
<td>1</td>
<td>Partial</td>
<td>15</td>
<td>7a</td>
<td>244,556</td>
<td>187,460c</td>
</tr>
</tbody>
</table>

a) Delivery was under way and the campaign had not yet started at the time of the ICG meeting.
b) NeisVac-C monovalent C-conjugate vaccine (Pfizer, 10-dose presentation).
c) Menactra ACWY-conjugate vaccine (Sanofi Pasteur, one-dose presentation).

In Niger, an initial vaccination campaign with doses from the country’s national meningitis vaccine stockpile reached about 40,000 people in affected areas before the arrival of doses requested from the ICG. The reactive vaccination campaign with vaccines from the ICG stockpile took place between 27 March and 6 April 2021 and reached 194,340 people aged 1–29 years with monovalent C-conjugate vaccines, for an administrative coverage of 88%. Leftover vaccine doses were used in a campaign in an adjacent health zone between 11 and 13 April 2021. For management of cases, 25,000 vials of ceftriaxone were delivered at the same time as the vaccine.

The reactive mass vaccination campaign in Benin after the country’s emergency request to the ICG took place on 3–12 May 2021. A total of 260,322 doses of ACWY-conjugate vaccines were administered to people aged 1–29 years, achieving an administrative coverage of ≥ 99% in all targeted areas. In addition, 6,000 vials of ceftriaxone were delivered. For the Democratic Republic of the Congo, the ICG approved shipment of 187,460 doses of ACWY-conjugate vaccine on 17 September 2021 for a reactive vaccination campaign targeting people aged 1–49 years, with an initial shipment of 5,000 vials of ceftriaxone.

Although a meningitis outbreak occurred in Ghana during 2021, the country did not make an emergency request for vaccine to the ICG.
Performance outcomes in 2021

The ICG currently has three key performance targets: requests are circulated to ICG members within one working day; the ICG reaches a decision on approval of requests within two working days; and UNICEF SD delivers approved vaccines to the requesting country within seven days.

During the 2021 epidemic season, the mean time to a decision on all three requests was one day, excluding the time necessary for Niger and Benin to submit additional information to the ICG (six and five days, respectively, Table 1). The mean time to delivery of vaccines to the requesting countries was 15.3 days after approval of requests (range, 13–18). The mean time to the start of a campaign after arrival of vaccines in the country was 15.5 days (range, 6–19) for the two emergency vaccine requests for which campaigns had taken place at the time of the ICG meeting (Niger and Benin). The mean time for preparation of requests after confirmation of outbreaks was 29.7 days (range, 12–39).

All requests in 2021 were circulated to ICG members on the same day they were received. Decisions were reached within two days for all three requests, after the necessary information had been submitted. The delivery time exceeded seven days for all three requests. The delays were caused by two main reasons. First, there was special documentation requirements for importing goods into Niger. Second, there was limited availability of air cargo capacity at the time the request was made from Benin. It was noted that the delays between declarations of outbreaks and submission of emergency requests to the ICG, and between arrival of vaccines in a country and the start of vaccination campaigns, are areas that require improvement. Longer ICG processing is necessary when additional information is required to support an emergency request, resulting in delays in the arrival of vaccines in countries.

Use of stockpiled ceftriaxone in 2021

Between 2016 and 2020, a total of 82 563 vials of ceftriaxone were delivered with vaccine to respond to meningitis outbreaks, ranging from 0 in 2018 to 51 900 in 2017. In 2021, a total of 36 000 vials were shipped to Niger (25 000), Benin (6000) and the Democratic Republic of the Congo (5000); another 5000 vials of ceftriaxone were shipped to the Democratic Republic of the Congo after the ICG meeting. By the end of 2021, the stockpile consisted of 27 285 vials.

Challenges in emergency vaccine response and lessons learnt during 2021

Meeting participants noted that, despite timely decisions by the ICG to approve emergency vaccine requests, late submission of requests by some countries, shipment delays and late implementation of campaigns reduce the effectiveness of vaccine response. Vaccine manufacturers described disruptions attributable to COVID-19 and limited freight forwarding capacity. In addition, given the long production lead times for meningitis vaccines, manufacturers called for long-term procurement commitments to facilitate supply planning. Problems in importation of the monovalent C-conjugate vaccine, which does not have WHO prequalification or national registration in Niger, were also reported. Personnel reported limited telephone and internet connectivity in the field, particularly in the Democratic Republic of the Congo, and diversion of health personnel to COVID-19 prevention.

Meeting participants agreed that factors associated with delays in emergency vaccine response should be monitored to identify any pattern in the causes; countries in particular need of support
should be identified and long-term solutions found. The following solutions were proposed for the short to medium term:

- strengthen laboratory capacity for case confirmation;
- provide guidelines to improve the quality of requests and specific written feedback to countries on their request;
- leverage the 18th Meningitis Annual Meeting and the 8th MenAfriNet partners’ meeting (9‒10 November 2021) to provide feedback to countries on their performance indicators; and
- improve operational feedback between vaccine manufacturers and freight forwarders.

Despite the challenges, some successes were noted. First, countries have been able to maintain their capacity for detection and response to meningitis outbreaks during the COVID-19 pandemic. Secondly, Niger and Benin conducted prompt, targeted reactive vaccination campaigns with vaccine held in their national stockpiles before the arrival of doses from the ICG stockpile for initial containment of the outbreaks.

4. The meningitis vaccine stockpile, supply, procurement and forecasting

The International Coordinating Group meningitis vaccine stockpile in 2021

ICG members reaffirmed that the meningitis stockpile should be maintained at a minimum of four million doses of C-containing vaccine to be ready at the beginning of the epidemic season, including three million CW-containing and an additional 1.5 million A-conjugate vaccine doses.

At the start of the epidemic season in January 2021, the stockpile contained a total of 4 797 240 vaccine doses. On the basis of currently contracted and available doses, it is expected that, on 1 January 2022, the ICG stockpile would contain 4 641 140 meningococcal vaccine doses of all types, including 2 828 600 ACW-polysaccharide and 312 540 ACWY-conjugate doses, in addition to 1 500 000 A-conjugate vaccine held in a revolving stockpile at the manufacturer’s production facility.

Vaccine procurement, supply outlook and market shaping

UNICEF-SD issued a tender in 2021 for meningococcal vaccines for the ICG stockpile for the period 2022–2024. While the aim of the tender is to ensure a sufficient supply and encourage healthy, sustainable competition through engagement with both actual and possible manufacturers, the tender covers A-, C- and W-containing vaccines, with a preference for already marketed products, products in the pipeline and products with a shelf life covering at least two epidemic seasons.

The most recent tender by UNICEF-SD is expected to result in a stockpile of 5.5 million doses per year throughout 2022–2024, including a minimum of four million doses of C-containing (of which three million CW-containing) and 1.5 million A-conjugate vaccine doses.

The tender was issued on 20 April 2021 and closed on 25 May 2021; offers were assessed during July and August. The number of vaccine doses offered by manufacturers, including WHO
prequalified and non-prequalified production, exceeded the requirement of 5.5 million doses for 2022–2024. While awards for supply after 2022 are nearing completion, those for 2023 and 2024 are still being reviewed.

Gavi presented an update on the current state of the meningitis vaccine market and its principles for deciding on funding for meningococcal vaccine procurement, in which it seeks to reach a balance between financial risk and the demand for vaccines to respond to outbreaks in order to make optimal use of limited resources. While Gavi’s mandate is to maximize health impact (in terms of lives saved) per US$ used on the demand side, the recommendation to the Gavi Board in 2016 was to ensure a stockpile sufficient to cover emergency needs in 95% of epidemic seasons.

Decisions on procurement after 2022 will be based on consideration of a number of variables, including qualitative trade-off and quantitative results of scenarios based on the Dalberg DOSE model (first demonstrated to ICG members in 2019). The parameters used in the model are epidemiological data from 2004 to the present. Gavi presented the results of scenarios based on the timing of prequalification and the beginning of production of the new ACWXY-conjugate vaccine, “MenFive” by the Serum Institute of India’s (SII) and discussed the implications for procurement decisions in 2022 and beyond. According to Gavi, while the current stockpile for 2022 of four million doses is expected to cover at least 95% of expected outbreak needs, measures to mitigate the risk of stockpile depletion should be considered in the absence of a prequalified SII ACWXY-conjugate vaccine. The measures could include emergency WHO prequalification of SII’s product or another vaccine or using vaccine doses in the national stockpiles of countries that are not affected by outbreaks.

While the Dalberg DOSE model includes a wide range of factors, there was consensus that it should not be relied on alone. Meeting participants proposed that ICG partner organizations and Gavi meet to discuss feedback on Gavi’s modelling and decision-making approach and to improve use of the Dalberg DOSE model. It was also suggested that closer consultation should be held on deciding on the proportions of conjugate and polysaccharide vaccines procured for the ICG emergency stockpile; the ICG gives preference to conjugate vaccines and recommends that their proportion in the emergency stockpile be maximized.

The ceftriaxone stockpile

As of September 2021, the ICG ceftriaxone stockpile contained 32,285 vials, with 27,285 projected for the end of 2021. Meeting participants noted that a decision should be reached on whether additional vials should be procured before the 2022 epidemic season and reached a consensus that a stockpile of 40,000 vials of ceftriaxone should be available for emergency use at all times.

Participants agreed to review the criteria for release of ceftriaxone from the stockpile when a request for ceftriaxone is received by the ICG before or without a request for vaccine, as such criteria are not currently clearly defined. They decided to establish a temporary working group to define the criteria for release of ceftriaxone vials, particularly when submission of requests for emergency vaccine is pending.
Manufacturers’ updates

Representatives of the manufacturers that currently supply meningitis vaccines for the ICG emergency stockpile, including SII, Bio-Manguinhos, Sanofi, Pfizer and GSK, described their progress in realizing their production plans.

After the success of MenAfriVac, SII is continuing development of its new MenFive ACWX-Y conjugate vaccine, which is intended for both preventive use and outbreak response campaigns. Bio-Manguinhos currently provides an ACW-polysaccharide vaccine for the ICG stockpile in partnership with Finlay, which manufactures bulk product. Preparations are being made ahead of application for WHO prequalification. Sanofi has provided its ACWY-conjugate vaccine product, Menactra, for use in the ICG stockpile since 2018. The company recently completed development of a new product, “MenQuadfi”, an ACWY-conjugate tetanus toxoid vaccine. Pfizer expressed its long-term commitment to production of vaccine products for both emergency and routine use. GSK continues its global commitment to innovation and providing a broad range of vaccine products, including those with potential humanitarian use.

5. Vaccine repurposing and mass campaigns

Since 2020, the ICG for epidemic meningitis has been repurposing vaccines in the emergency stockpile that are nearing their date of expiry for use in preventive campaigns in countries at high risk of meningococcal meningitis outbreaks. Until 2020, repurposing was experimental, with no fully defined standard operating procedures, and was not validated by Gavi. In 2020, a total of 1 005 350 doses, including ACW-polysaccharide, ACWY-polysaccharide and ACWY-conjugate vaccines, were repurposed for preventive campaigns in Cameroon with the approval of the Gavi Board and Gavi funding for vaccine shipment and other materials.

In 2021, 1 641 475 vaccine doses that were due to expire between June and December 2021 were repurposed for preventive campaigns, comprising 541 967 doses of ACW-polysaccharide and 39 675 of ACWY-conjugate vaccine used in Niger, 414 298 doses of ACW-polysaccharide vaccine used in Benin and 644 800 doses of ACW-polysaccharide vaccine used in Togo. In the three vaccination campaigns completed as of September 2021, average coverage was estimated to be 94% (85%, 100% and 95%, respectively, in Niger, Benin and Togo). While all CW-containing vaccines that were due to expire in 2021 were either used in emergency campaigns or repurposed, no proposals were made by countries for repurposing 75 000 C-conjugate vaccines due to expire in 2021.

In 2021, standard operating procedures were defined for repurposing stockpiled meningococcal vaccines, significantly improving the timeliness of delivery of repurposed vaccines. The objectives of the standard operating procedures are to prevent wastage of vaccines due to expire, ensure that repurposed vaccines arrive in countries sufficiently long before their date of expiry to ensure completion of preventive campaigns, and achieve high campaign coverage (preferably administrative coverage of 85–100%). This involves five steps:

- Step 1 (Six months before expiry): The ICG Secretariat is informed of vaccine doses that are nearing expiry.
- Step 2 (Five months before expiry): Countries suitable for deployment of repurposed doses are identified.
- Step 3 (Four months before expiry): The relevant countries are contacted.
Step 4 (Four months before expiry): The ICG decides to which countries the repurposed doses will be allocated, with consideration of i) the readiness of the country to receive vaccines and conduct vaccination campaigns, ii) the number of doses available and the expected number necessary to cover the targeted areas, iii) the risk of meningitis outbreaks and, iv) the valency of the vaccines available and bacterial strains identified.

Step 5 (Two months before expiry): Proposals are made to selected countries, and agreement is reached to undertake vaccination campaigns. Gavi is informed of the decisions, and UNICEF SD organizes shipping of repurposed vaccines to the selected countries.

The meeting reached consensus that, to facilitate the repurposing strategy, relevant personnel in countries should receive guidance on making proposals for preventive campaigns with repurposed vaccines and given feedback on relevant key performance indicators.

It was noted that, if doses were not used in emergency campaigns, 0.7 million stockpiled doses would expire between August and October 2022.

It was agreed that, in the longer term, the strategy should be refined to ensure consistent procedures for vaccine repurposing, with optimal timelines to ensure that doses are available for emergency response and at the same time can be delivered to countries for preventive campaigns, if repurposed, with sufficient time for campaign implementation before their expiry.

Currently, the operational costs of preventive campaigns are not covered by Gavi, and support has been given on a case-by-case basis from the revolving fund held by WHO. Meeting participants agreed to discuss further the long-term sustainability of this arrangement.

Although the repurposing mechanism can reduce wastage of vaccines due to expire, it does not guarantee that all can be used. Meeting participants discussed promoting interest in countries for preventive campaigns with repurposed doses before the epidemic season. They noted the inherent challenges in promoting demand, as less attention is given to meningitis at the end of the year, and other infectious diseases often have greater priority outside the epidemic season.

6. Meeting decisions and action points

A number of specific action points were noted and decisions taken with respect to the ICG meningitis vaccine stockpile.

- ICG members agreed that the meningitis emergency vaccine stockpile should be maintained at four million doses to ensure its availability for emergency use at the beginning of the 2022 epidemic season, including three million CW-containing and 1.5 million A-conjugate vaccine doses. The ICG gives preference to conjugate vaccines and recommends that their proportion in the emergency stockpile be maximized.
- ICG members reached consensus that the current stockpile of ceftriaxone be replenished and maintained at a level of 40,000 vials.
- ICG members agreed that countries at risk of meningitis outbreaks be informed about the strategy for repurposing stockpiled meningitis vaccines nearing expiry. It was agreed that a session on the strategy be included at the 18th Meningitis Annual Meeting and 8th MenAfriNet Partners’ meeting, which was to take place on 9–10 November 2021.
- The ICG and partners will continue to support countries in improving their capacity to complete emergency vaccine requests. In particular, it was suggested that feedback on
completion of ICG emergency request forms be increased and additional training on completion of ICG request forms be developed. It was suggested that the 18th Meningitis Annual Meeting and 8th MenAfriNet Partners’ meeting be used as a forum to engage with countries on these issues. In addition, the ICG will continue to make the ICG emergency request form more user friendly.

- ICG members decided to discuss the sustainability of use of the revolving fund to support operational costs of preventive campaigns with doses from the ICG meningitis vaccine stockpile that were nearing expiry.
- A temporary working group will be established to define the criteria for release of ceftriaxone doses, particularly in situations in which approval of emergency vaccine requests is pending.
- The ICG will hold a joint session with Gavi to plan procurement decisions for 2022 and beyond. Points of discussion will include the proportions of conjugate and polysaccharide doses to be included in the vaccine stockpile, market shaping and use of modelling for making decisions on vaccine procurement.
Annex 1. Meeting agenda

Objectives:
- Review the outbreaks and campaigns supported by ICG during 2020–2021.
- Discuss the forecast for vaccine demand and supply in 2020–2021.
- Discuss manufacturers’ production plans and future vaccine developments.

Chair: Pierre Formenty

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00–14:10</td>
<td>Introduction, objectives and expected outcome of the meeting</td>
<td>Chair</td>
</tr>
<tr>
<td>14:10–14:20</td>
<td>Meningitis epidemiological situation 2020–2021 and review of responses and lesson learnt (investigation, campaigns, laboratory diagnosis, monitoring and reporting) – (10 min)</td>
<td>Meningitis team (WHO Regional Office for Africa)</td>
</tr>
<tr>
<td>14:20–14:25</td>
<td>ICG performance – review of key indicators (5 min)</td>
<td>ICG Secretariat</td>
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<tr>
<td>14:25–14:35</td>
<td>Update on vaccine repurposing strategy, experience in 2020–2021 and lessons learnt (10 min)</td>
<td>Meningitis team (WHO)</td>
</tr>
<tr>
<td>14:35–15:05</td>
<td>Discussion (30 min)</td>
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<tr>
<td>15:05–15:15</td>
<td>Break</td>
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Session 2: Vaccine supply

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
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<tbody>
<tr>
<td>15:15–15:30</td>
<td>2020–2021 vaccine procurement and deployment</td>
<td>UNICEF SD</td>
</tr>
<tr>
<td></td>
<td>Vaccine supply forecast for 2022–2024: tender update and availability timeline</td>
<td></td>
</tr>
<tr>
<td>15:30–15:45</td>
<td>Market shaping update</td>
<td>Gavi</td>
</tr>
<tr>
<td>15:45–16:15</td>
<td>Discussion (30 min)</td>
<td>All</td>
</tr>
<tr>
<td>16:15–17:30</td>
<td>Manufacturers’ production plans and future vaccine developments (5-min presentation followed by 10-min discussion for each manufacturer)</td>
<td>Bio-Manguinhos/Finlay GSK Pfizer Sanofi-Pasteur Serum Institute of India</td>
</tr>
<tr>
<td>17:30</td>
<td>Conclusions</td>
<td>Chair</td>
</tr>
</tbody>
</table>
Annex 2. List of participants

**ICG members**

Emmanuel Musa, Team lead, High Impact Epidemics (EHI)/Health Emergency Interventions (HEI), WHO, Geneva, Switzerland
Katya Fernandez, Technical Officer, EHI/HEI, WHO, Geneva, Switzerland
Myriam Henkens, International Medical Coordinator, Médecins Sans Frontières, Brussels, Belgium
Miriam Alia, Outbreak Response Advisor, Médecins Sans Frontières, Barcelona, Spain
Daniela Garone, International Medical Coordinator, Médecins Sans Frontières, Brussels, Belgium
Christopher Gregory, Senior Advisor, UNICEF, New York City (NY), United States of America
Sanjay Bhardwaj, Health Specialist, UNICEF, New York City (NY), USA
Frank Mahoney, Senior Officer, Immunization, IFRC, Geneva, Switzerland

**WHO Regional Office for Africa**

Anderson Latt, Epidemiologist, Emergency Preparedness (EMP), Brazzaville, Congo
Andre Bita Fouda, Medical Officer, Vaccine Preventable Diseases (VPD), Brazzaville, Congo
Clement Lingani, National Professional Officer, UCN/VPD, Ouagadougou, Burkina Faso

**WHO, Geneva, Switzerland**

Altaf Musani, Director, HEI
Pierre Formenty, Unit Head a.i., EHI/HEI
Laurence Cibrelus, Team lead, EHI/HEI
Philippe Barboza, Team lead, EHI/HEI
Antoine Durupt, Project manager, Immunization, Vaccines and Biologicals (IVB)/Agenda, Policy and Strategy (APS)
Marie-Pierre Preziosi, Team lead, IVB/APS

**Vaccine manufacturers**

Denise Lobo Crivelli, Communications adviser, Bio-Manguinhos, Rio de Janeiro, Brazil
Patricia Corrêa Santana, Commercial Division Manager, Bio-Manguinhos, Rio de Janeiro, Brazil
Anne Bomfim da Silva, Market Relations, Bio-Manguinhos, Rio de Janeiro, Brazil
Yanet Climent Ruiz, Head of Meningitis Project, Finlay, Havana, Cuba
Francoise Griguer, Senior Director, Sanofi, Lyon, France
Philip Ho, Public affairs, Sanofi, Lyon, France
Marc Lafort, Director, Technical Services, SII, Pune, India
Sambhaji S. Peral, Director, R&D, SII, Pune, India
Christine McKenna, Senior Director, Partnerships, Pfizer, New York City (NY), USA
Alvin Liu, Executive Director, Products, Pfizer, New York City (NY), USA
Ariane Mccabe, Director, Health and Public Affairs, GSK, Geneva, Switzerland
ICG partners
Francisco Luquero, Senior Technical Advisor, Gavi, Geneva, Switzerland
Stephen Sosler, Head, Vaccine Programmes, Gavi, Geneva, Switzerland
Margarita Xydia Charmanta, Senior Manager, Market Shaping, Gavi, Geneva, Switzerland
Cassandra Quintanilla, Senior Programme Manager, Gavi, Geneva, Switzerland
Hans Christiansen, Contracts Manager, UNICEF SD, Copenhagen, Denmark
William Peoples, Procurement Associate, UNICEF SD, Copenhagen, Denmark
Antonia Naydenov, Contracts Specialist, UNICEF SD, Copenhagen, Denmark
Michaela Briedova, Contracts Specialist, UNICEF SD, Copenhagen, Denmark

ICG secretariat, EHI/HEI, WHO, Geneva, Switzerland
Eduardo Vargas, Medical Officer
Mohammad Salim Reza, Technical Officer

Observer
Tatiana Alvarez, Immunization Officer, IFRC, Geneva, Switzerland

Rapporteur
Sol Richardson, freelance editor, London, United Kingdom of Great Britain and Northern Ireland