International Coordinating Group (ICG) on Vaccine Provision for Cholera, Meningitis, and Yellow Fever: Report of the Annual Meeting

23-24 September 2020

World Health Organization

International Coordinating Group (ICG) on Vaccine Provision for Cholera, Meningitis and Yellow Fever: report of the annual meeting, 23-24 September 2020

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Abbreviations and acronyms

CFR	Case fatality rate
DCGI	Drugs Controller General of India
DRC	Democratic Republic of the Congo
EMA	European Medicines Agency
EVD	Ebola virus disease
EYE	Eliminate Yellow Fever Epidemics
FDA	Food and Drug Administration of the United States
Gavi	Gavi, the Vaccine Alliance
GOC	Governance Oversight Committee
GTFCC	Global Task Force on Cholera Control
Hib	*Haemophilus influenzae* type b
HSS	Health system strengthening
ICG	International Coordinating Group on Vaccine Provision
IFRC	International Federation of Red Cross and Red Crescent Societies
KPI	Key performance indicator
MSF	Médecins sans Frontières
Nm	*Neisseria meningitidis*
OCV	Oral cholera vaccine
PCCS	Post-campaign coverage surveys
PPE	Personal protective equipment
PQ	Prequalification
RT-PCR	Reverse transcription polymerase chain reaction
SAGE	Strategic Advisory Group of Experts on Immunization
SD	Supply Division of UNICEF
SIIPL	Serum Institute of India
SOP	Standard operating procedure
UNICEF	United Nations Children's Fund
UNICEF SD	Supply Division of UNICEF
VIS	Vaccine Investment Strategy
WASH	Water, sanitation and hygiene
WHO	World Health Organization
WHO-OSL	WHO Operation Support and Logistics

Introduction

The 2020 annual meeting of the International Coordinating Group (ICG) on Vaccine Provision for Cholera, Meningitis and Yellow Fever was held online from 23 to 24 September 2020. The meeting was chaired by Dr Olivier Ronveaux on day 1 and by Dr Laurence Cibrelus on day 2. The agenda of the meeting and the list of participants are attached as Annex 1 and Annex 2, respectively.

The ICG has four founding members – the International Federation of Red Cross and Red Crescent Societies (IFRC), Médecins Sans Frontières (MSF), the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO), with the latter being the host agency for the ICG Secretariat. Staff from these member organizations were present at the meeting, together with staff from Gavi the Vaccine Alliance, which finances the vaccine stockpile, and UNICEF Supply Division which is the main procurement agency. Although vaccine manufacturers have attended ICG annual meetings in the past, they were not present at the 2020 meeting owing to the shorter and combined agenda which dealt with issues related to three vaccine stockpiles plus EVD vaccine stockpile. It was agreed that the vaccine manufacturers will be updated later about the meeting decisions which needs their attention and further action.

Objectives of the meeting

The objectives of the meeting were:

- to review the epidemiological situation in 2019-2020
- to review the outbreaks and campaigns supported by the ICG during 2019-2020
- to discuss the vaccine demand forecast
- to review the ICG coordination mechanisms.

Epidemiological situation in 2019-2020

Meningitis
Katya Fernandez

A comparison of the meningitis epidemic seasons of 2019 and 2020 in Africa's meningitis belt showed a decline in suspected cases from 13 692 cases in 2019 to 9975 cases reported by 20 countries in 2020. The case fatality rate (CFR) similarly fell from 5.7% to 5.4% over the same period. In fact, the number of cases has been decreasing over the past three years. From September 2019 to September 2020 the main meningitis pathogens identified were *Streptococcus pneumoniae*, NmC, NmX, NmW and Hib. *S. pneumoniae* was the leading pathogen, accounting for 32.7% of samples collected in 2019 and 46.3% in 2020. NmC accounted for 32.6% of pathogens collected in 2019 but just 5.3% in 2020. No NmA has been identified since 2017.

Two countries – Benin and Ghana – experienced meningitis epidemics in 2020 (caused by NmC in Benin and by *S. Pneumoniae* and NmX/NmW in Ghana). In Benin the epidemic threshold was reached in week 52 of 2019 in Banikoara in the north of the country. There

were 83 cases and 13 deaths. Surveillance, reporting, case management and laboratory confirmation were strengthened, and the initial response vaccinated some 900 people in the affected area in the first week of 2020. The doses used were from the national stock (originally set up for vaccination of Muslim pilgrims) and this helped to slow the outbreak. A reactive mass vaccination campaign in late January and early February, using ACYW conjugate vaccine released by ICG, covered 226 101 persons aged 1–29 years (coverage over 95%). The main challenge was the single-dose vaccine size in an area with limited cold chain capacity.

In Ghana, two districts in the Upper West region crossed the epidemic threshold in weeks 3 and 9 of 2020. Again, surveillance, reporting, case management and laboratory confirmation were strengthened. A total of 137 cases and 18 deaths were recorded in the region, with the main pathogens being *S. pneumoniae* (42%) and NmX (23.6%). However, no reactive vaccination campaign followed as there is as yet no policy for reactive vaccination of pneumococcal outbreaks; vaccination in pneumococcal outbreaks is currently being reviewed by the Strategic Advisory Group of Experts on Immunization (SAGE).

Cholera

Malika Bouhenia

In 2019 Africa reported the lowest numbers of reported cases of cholera in the present century and the Americas reported the lowest number since 2010. However, 93% of the 2019 total of 923 037 cholera cases were reported in Yemen. 2019 also saw some 1911 cholera deaths. Despite Africa's reduction in numbers, the CFR is higher in Africa than in other regions. During the period from September 2019 to September 2020, 16 countries reported outbreaks with a total of more than 450 000 cases and over 900 deaths. Of these, more than 25 000 cases and 370 deaths were reported from the Democratic Republic of the Congo (DRC), while 400 000 cases and 280 deaths were reported from Yemen. The remaining 14 countries together reported nearly 30 000 cases and 400 deaths.

There are concerns at both under-reporting from some countries and a low proportion of laboratory confirmation in others, leading to suspected over-reporting of cholera in those places. Countries not reporting cholera cases included Bangladesh (outside Cox's Bazaar), India and Philippines. However, campaigns were completed in DRC, Sudan and Uganda between October 2019 and July 2020. Campaigns were postponed in Bangladesh (part of Cox's Bazar), Mozambique and South Sudan because of COVID-19 and security issues. It was also felt there had been missed opportunities to vaccinate in Burundi, Kenya and Nigeria since there were outbreaks but no requests were received by the ICG. In Cameroon, following emerging outbreaks in different parts of the country, the ICG approved the use of oral cholera vaccine (OCV) to conduct reactive vaccination campaigns in Extreme North, North, Littoral, South and Southwest regions, which also required ICG approvals for changing the strategy to vaccinate in different areas as originally intended, making immediate use of the existing vaccine stocks available in the country at the moment.

Some 38 million doses of cholera vaccine were requested through GTFCC and ICG in 2019, with around 17 million being approved by the ICG. For 2020 the corresponding figures were 22 million doses requested and 19 million approved. During the period September 2019 to September 2020, 22.3 million doses were requested from the ICG, 9.2 million were approved and 5.8 million were administered. Normally most requests come to the ICG, although in

2020 requests have so far been submitted equally to the ICG and the Global Task Force on Cholera Control (GTFCC).

Action points

- ICG should further emphasize its vaccine stockpile to susceptible countries as outbreaks still occur without requests to the ICG.
- Efforts must be made to shorten the time to implementation (which currently ranges from 1 to 4 months).
- Countries to be encouraged to strengthen surveillance and report cholera cases to WHO.

Yellow fever

Jennifer Horton

Yellow fever cases and outbreaks over the past year have had a wide geographical scope and are typically detected in areas where people are involved in forestry, agriculture or herding. Viral transmission in border areas and mobile populations brings a risk of spread among localized high-risk groups and across international borders.

From the Americas, the majority of reported cases were from Brazil. However, numbers reported were far fewer in the past year (down from 1400 in 2018/19 to just 18 in the most recent period 2019/2020). Sporadic cases were also documented from Bolivia, Peru and Venezuela. In Africa, yellow fever cases were confirmed in several high-risk countries across the region. Outbreaks were documented in Ethiopia, Nigeria, South Sudan and Uganda, while there were outbreak potential cases from Chad, the Democratic Republic of Congo (DRC) and Mali.

Endemic areas in West African countries had previously benefited from the campaigns through the Yellow Fever Initiative in 2006–2014. The success of these activities is evidenced by the absence of yellow fever outbreaks in these countries from 2015 onwards. Nonetheless, there have been occasional sporadic cases in some of these countries in the past year. These are not unusual events in endemic areas, but it is a concern when population immunity levels are suboptimal as this represents a re-emerging epidemic risk. Additionally, three countries reported in 2019 that they had lower vaccination coverage though routine immunization than they achieved in prior years, suggesting a potentially growing immunity gap.

There have been four requests to the ICG for yellow fever vaccine since the last annual meeting in September 2019, all of which have been from countries in Africa. The recent requests from 2020 (year to date) have been noteworthy for the impact of COVID-19 on delaying investigations and responses. On the positive side, rapid outbreak responses have been implemented in some instances. Rapid implementation using in-country vaccine may have interrupted transmission in Ethiopia (2020) and Bauchi State, Nigeria (2019).

In two of the four applications to ICG, the ICG members suggested revisions to the reactive campaigns as follows: recommendation of a more focused response in Ethiopia; and recommendation and approval of a broader response in South Sudan and Uganda (addition of

one district with adjacent boundaries). Both suggestions were agreed by the countries concerned.

Regarding implementation, there have been delays of up to six months before confirmation of an outbreak and/or approvals by the ICG. In Bauchi, Nigeria, an initial response in the local government area with the epicentre of the outbreak was mounted using vaccine already in the country. However, the larger response lagged some months behind and occurred in a fragmented fashion secondary to the very small administrative units in two states. The initial response was suboptimal, partly due to the short lead time for organizing central support. In Uganda, delayed disbursement of funds from the government to the district slowed implementation, while refugee groups proved more mobile than anticipated.

Overall, the ICG requests for vaccine have included improved quality, including aspects of the epidemiological overviews and rationale for response, indicating improved capacity at country level. Initial entomological observations have been shared and detailed studies are pending. An outstanding area for improvement is after-action reporting, including post-campaign coverage surveys (PCCS). The campaign reports and PCCS have frequently been partial or delayed.

Practical guidance is being developed on PCCS adaptation for the short timelines and constraints of the outbreak response context. Work is ongoing with countries and regions to ensure full reporting of implementation. As it was an action point from last year's annual meeting, a revised ICG application form package with supporting guide, FAQs and annexes has been developed. This form will give an option for more environmental details. However, WHO's current vaccination survey methodology does not fit easily with reactive campaigns aimed at local administrative levels.

Action points for Yellow Fever

- Development of operational guidance for the PCCS in resource-limited settings and that can be applied in reactive campaigns.
- Roll-out of the updated ICG request form package.

COVID-19 impact on outbreak detection and response

Mohammad Salim Reza

Several disease prevention and outbreak response campaigns had been slowed or delayed due to the COVID-19 pandemic. For instance, there was uncertainty as to whether the reduction in reporting of meningitis cases was influenced by disruption of the surveillance system due to the ongoing pandemic, or due to a focus on seeking COVID-19 cases. The lowest proportion of meningitis reporting in 2020 was during weeks 12–20 (normally the peak season), coinciding with the peak in efforts to control COVID-19. Only Benin had a significant meningitis outbreak, and no emergency was declared after March 2020. And while a large quantity of meningitis vaccine doses nearing expiry were repurposed for use in Cameroon, there were huge challenges (and extra costs) to deliver the vaccine, including delay in getting approvals from Gavi. As with meningitis, reduced cargo flights delayed some emergency supplies and increased transport costs.

In some places diagnoses of cholera were delayed because laboratories were busy with COVID-19, and campaigns were delayed in several locations. Some staff normally dealing

with cholera in the DRC were reassigned to COVID-19 so fewer staff were available to support the outbreak response.

For yellow fever, it was reported that the emphasis on COVID-19 delayed both investigations and programme implementation. The response to an outbreak in Uganda was delayed for 6 months, and in Ethiopia the initial delay was 4 months with no date for implementation confirmed. However, Ethiopia had already carried out a large-scale measles campaign while the yellow fever campaign was planned for a limited area. South Sudan's application to the ICG coincided with detection of COVID-19 in the country and it took 4 months to answer the ICG's request for clarifications. Again, COVID-19 affected human resources and supply chains for the yellow fever response.

From the surveillance and laboratory perspective, delays have been observed in the investigation of yellow fever suspect or confirmed cases in some instances, and lower volumes of suspect case samples were processed by national laboratories. Laboratory reagents for RT-PCR were repurposed to facilitate COVID-19 testing in the early stages of the pandemic; however, this issue has now been resolved. Capacity-building activities such as laboratory and vector surveillance training have been postponed.

With regard to yellow fever control activities, the needs for personal protective equipment (PPE) and enhanced infection prevention control (IPC) have been a key bottleneck to implementation of reactive campaigns. This unexpected need and resultant funding gap could not be met locally so additional supplies were needed, with additional costs. In Cameroon, for a preventive campaign using meningococcal vaccine close to expiry (22% increase) and Uganda for yellow fever response (11% increase), the ICG revolving fund was used to cover the increase, and in South Sudan it was supported by WHO-OSL with the rest to come from the country fund. The PPE needs for the campaign in Ethiopia were met by in-country resources. It was noted that the Gavi HSS flexibility option did not materialize as an efficient timely mechanism to address the PPE funding gap. So far the additional costs due to COVID-19 have been between 10 and 25 US cents per target overall.

Action points

- Document (with detailed itemization) the financial implications of reactive campaigns due to COVID-19 on yellow fever, cholera and meningitis campaigns
- ICG stakeholders to explore streamlined solutions to finance and procure COVID-19 PPE for reactive vaccination campaigns.

Outbreaks and campaigns supported by the ICG during 2019-2020

ICG performance – review of key indicators

Eduardo Vargas

Since the last ICG annual meeting, the group had been using two different performance indicators for countries – the time from outbreak confirmation to requesting submission to the ICG, and the time between arrival of the vaccines in the country and the start of campaign implementation, although a target for these indicators had not been agreed previously by the ICG. A review of emergency requests for cholera vaccine in 2019–2020 showed no instances in which the time from outbreak confirmation to submission of a request was as short as 7

days; times varied from a minimum of 9 days to a maximum of 156 days (at which time the outbreak was almost over). While the start of the campaign after arrival of the vaccine in the country took just 3 days in two cases, it took 107 days in one case and 178 in another.

In 2020, for meningitis, there was only one vaccine request from Benin. The request was made to the ICG 18 days after confirmation of the outbreak. Though after the vaccine arrived in the county, the campaign began within the targeted 10 days. For yellow fever, there were just four requests during the current period, all of which were approved. From outbreak confirmation to request submission just one country was within the 7-day target, while the target for starting the immunization campaign within 10 days of receipt of the vaccine was also met by just one country. One other country took 179 days to start its campaign after receiving the vaccine, while two countries had not yet started theirs (Table 1)

Table 1- ICG Key Performance Indicators 2019-2020

Disease	Days between confirmation of outbreak to submission of request	Circulation of request	Days to provide additional information to ICG	Decision	Vaccine arrival in country	Days from vaccine arrival to start of campaign
Target	**7 days**	**1 day**		**2 days**	**7 days**	**10 days**
Cholera (n=12)	47	0.3	15	1.7	13.8	52
Yellow fever (n=4)	26.5	0.5	47	1.5	15	179*
Meningitis (n=1)	18	0	-	1	9	10

n: number of requests
*reflects information of one request.

Discussion

For the country performance indicators, it was agreed to keep the same target for the three diseases: 7 days for submitting the request after outbreak confirmation, and 10 days for implementing the campaign after vaccine arrival. However, as stressed by the African Regional team, countries should be informed about the target of country performance indicators set by the ICG, and they should be supported to identify the bottlenecks and reasons for delays in request submission and campaign implementation. This would also enable the partners in ICG to assist where necessary. It was pointed out that new ICG Yellow Fever request form has now become a package which aims to guide country efforts and to assess them.

Action points:

- WHO regions to explain to countries how the ICG request system works and the indicators that are measured, stressing the importance of tightening compliance with indicators.
- Update the country indicators accordingly (ICG SOPs and accountability framework).

Reports from technical teams

Meningitis – management of expiring vaccine doses, recommended vaccine stockpile for 2021, update on pentavalent vaccine

Olivier Ronveaux, Eduardo Vargas

By the end of the 2020 epidemic season, the stockpile included 508 000 doses of conjugate vaccine and 705 000 doses of polysaccharide vaccine with expiry between July and September 2020. Given that preventive mass vaccination campaigns were suspended at that time because of SAGE recommendations in place due to COVID-19, the ICG decided not to repurpose 208 000 doses of ACYW conjugate vaccine. Later, after having more flexibility to conduct preventive mass vaccination campaigns considering the COVID-19 context, the ICG explored options to repurpose 300 000 doses of ACYW conjugate vaccine with expiry in August 2020, and duly received a request from Cameroon to vaccinate high-risk populations which was approved by the ICG. Gavi financed the vaccine costs and the ICG revolving fund covered injection devices, shipment of vaccines and devices, and operational costs. The whole process, from ICG decision to arrival of vaccines and devices, took 52 days, with the longest delay being validation of the ICG decision by Gavi which took 25 days. Later, the ICG also decided to repurpose 705 000 doses of ACW/ACYW polysaccharide vaccine and the same process was followed. Cameroon was the only country to submit a vaccine request. The costs were covered as with the conjugate vaccine. This time the process took 42 days, and Gavi's decision and vaccine shipment was faster. However, the shipment of injection devices took 3 weeks, due to drastically reduced cargo capacity this year.

This experience showed long decision and shipment times. The information provided in the weekly stockpile availability report from UNICEF Supply Division (UNICEF SD) on the expiry date of the conjugate vaccine was not accurate, and ICG was informed later that each batch had a different expiry date. Because of COVID-19, the Cambridge methodology to repurpose doses was not used as there was no time to apply the model once SAGE recommendations allowed consideration of vaccination activities. It was argued that validation of the proposed long-term mechanism to repurpose doses was urgently needed. In this regard, standard operating procedures (SOPs) developed by ICG were shared with partners and are currently pending a funding decision from Gavi.

With regard to the stockpile of Ceftriaxone, there are 200 vials (expiry September 2022) stored in Geneva, and a rotating stock of 56 228 vials stored by the manufacturer in Greece.

ICG core members met on 30 June 2020 to discuss the meningococcal vaccine stockpile size and composition for the epidemic season 2021 in order to give enough time to UNICEF SD to work with manufacturers and obtain the required supply. For 2021, the stockpile size recommended by the ICG should be 4 million doses of C-containing vaccine, from which 3 million doses are CW-containing vaccine, and there is a strong preference for conjugate vaccine with a shelf-life for two full epidemic seasons (2021–2022). The intention is to have as much vaccine as possible as rotating stock in order to avoid expiry. This decision was immediately communicated to UNICEF SD.

An overview was presented of progress in the pentavalent vaccine being developed through collaboration between PATH and Serum Institute of India (SIIPL) with funding from the United Kingdom of Great Britain and Northern Ireland. PATH and SIIPL are working together with WHO's prequalification (PQ) team to develop a strategy aiming for PQ in late 2021 for use in the stockpile. The strategy mimics what was done for MenAfriVac and expects submission of regulatory files to the Drugs Controller General of India (DCGI), PQ application submitted to WHO in May 2021 and PQ granted in December 2021. The (optimistic) aim is to have 5–10 million doses of NmCV-5 in the ICG stockpile by January 2022.

Discussion

In discussion it was noted that the exercise of repurposing doses of meningococcal vaccine nearing expiry had saved 1 million doses from being wasted. UNICEF SD pointed out that airline cargo capacity has been drastically reduced this year due to COVID-19. Because of delays in shipping devices to Cameroon, UNICEF had lodged complaints with both the airline and the freight forwarder as the cargo was pushed off the air transport twice before being transported. They also discussed with the supplier the updating and exchange of information related to stock expiry dates. The shipment led to negative comment in Cameroon's media that UNICEF was supplying vaccine that was due to expire – although the government had agreed to this.

Action points

- Gavi to give endorsement of the repurposing mechanism SOPs by the Gavi Board in December 2020.
- ICG secretariat to provide justification of the 2021 stockpile size.

Cholera – Update on the Global Task Force on Cholera Control

Malika Bouhenia

The GTFCC established a stockpile in 2013 and launched a Global Roadmap in 2017 that targets 47 countries and continues until 2030. The roadmap combines five areas of activity, including the use of cholera vaccines. There was little use of the vaccine in many countries until the establishment of the stockpile. By 2019, 13 countries held cholera vaccination campaigns. Since September 2019, campaigns were implemented in Bangladesh and South Sudan. The GTFCC has received vaccine requests from DRC (5.4 million doses), Yemen (5 million), Zambia 5.7 million to vaccinate six districts (1.5 million already shipped), Uganda (an extra 703 000 this year), and Zanzibar (not yet approved).

The WHO cholera team is working with countries to identify the areas/hotspots where vaccination is most needed. However, the vaccine production declined, with 18 million doses produced this year compared with 30 million last year, due to a deterioration in OCV demand as a result of COVID-19 disruptions. There is a lack of a systematic approach to integrate water, sanitation and hygiene (WASH) with the administration of oral cholera vaccine (OCV). Efforts are being made to use OCV campaigns as a starting point to implement WASH as well.

Action points

- Encourage a systematic approach that uses OCV administration as a link to improve WASH standards.
- Encourage development of national cholera plans in targeted countries of the roadmap.

Yellow fever – update on EYE strategy roll-out and implications for epidemic risk

Laurence Cibrelus

The EYE strategy was launched 3.5 years ago with the aim of eliminating yellow fever epidemics. It is all the more significant in the context of the global re-emergence of *Aedes*-borne diseases and expanding geographical distribution of *Aedes aegypti* with potential risk in non-endemic areas. The EYE strategy has three objectives: protect at-risk populations, prevent international spread, and contain outbreaks rapidly. Since the start of the strategy in 2017 there has been marked progress in the battle against yellow fever, with over 150 million people protected against yellow fever in Africa.

There is now global recognition of the yellow fever threat, stronger capacity for rapid confirmation, and active roll-out of large-scale preventive mass vaccination campaigns enabled by a marked increase in vaccine supply – for instance, some 135 million doses available in 2019 and 150 million in 2020. The EYE global coordination mechanism is looking after the supply for preventive vaccination activities (routine, preventive campaigns) while the revolving emergency stockpile with 6 million doses is managed by the ICG.

Accomplishments of countries since the inception of the EYE Strategy range from strengthening of surveillance and laboratory systems to enhanced population protection. Key achievements include the completion of nationwide preventive mass vaccination campaigns (PMVCs) in Sudan, and planned completion in Ghana this year. Both DRC and Nigeria have also taken great strides towards PMVC implementation, with Nigeria currently engaged in an accelerated schedule. Towards enhancement of routine immunization coverage in Africa, Sudan has plans to introduce in 2021 to the RI schedule. It is anticipated this will be followed by Uganda as early as 2021. Additionally, there are now three reference laboratories for yellow fever in Africa, with dedicated catchment countries, the EYE.ops pilot for improved international sample transport, and advances towards improved yellow fever diagnostics under development. Ongoing challenges include strong engagement with some high-risk countries, and delays and postponement due to COVID-19.

In conclusion it was stressed that EYE roll-out has a direct impact on the risk of yellow fever epidemics with a marked increase in population immunity, more alerts of suspect yellow fever cases detected, the re-emergence of areas with low immunity and epidemic risk in West Africa, and increased detections of virus circulation in Central and Eastern Africa. COVID-19 has presented challenges to conducting proper surveillance and implementing large-scale campaigns. The impact is worsening immunity gaps and hindering implementation. The EYE partnership has worked together to undertake mitigation strategies to reduce the impact of COVID-19 through engagement with countries despite competing priorities, by promoting strong links between global, regional and country levels, and by improved platforms for partners to continue their engagement and tailor contributions to needs The work facilitated

through the EYE strategy with emphasis on prevention and early detection complements the important role of the ICG for rapid outbreak response.

Vaccine procurement and deployment

Main issues in 2020

UNICEF Supply Division

UNICEF SD presented details of the last 12 months of procurement and deployment of vaccines for outbreak response. UNICEF received just one request for meningitis vaccine from the ICG for emergency response during that period – for an outbreak in Benin in January 2020. In response to a question about difficulties with acceptance of meningitis vaccines on arrival in a country, it was pointed out that this may happen when a non-prequalified vaccine is shipped to a country where the regulators have not yet approved it. Supply of WHO-prequalified vaccines usually do not cause similar problems.

Four requests were made by the ICG for yellow fever vaccine. There was a lengthy delay in a delivery to South Sudan because of problems at the receiving end, especially in obtaining the customs clearance. Additionally, there were 11 ICG requests for OCV during the same period. It was explained that, when a request is made, the suppliers (i.e. manufacturers) usually have the vaccine ready within two days but the transport does not begin until the forwarding agent is able to collect the vaccine. Security issues in the receiving countries caused several delays during the year.

For yellow fever there is a revolving emergency stockpile of vaccine that contains 6 million doses available at all times. The OCV emergency stockpile is also revolving and includes 3 million doses available at all times, except for brief periods in 2019 after supplies were shipped and before replacement stocks arrived. The meningitis vaccine emergency stockpile had 4.4 million doses at 1 January 2020, of which 1.5 million doses were A conjugate vaccine and 2.9 million doses were C-containing, of which 2.6 million were W-containing. Unfortunately, 300 000 doses of ACYW conjugate vaccine that were available in the stockpile were not taken into account in the UNICEF SD stockpile status report and therefore, during the 2020 epidemic season, their availability to the stockpile was not known by the ICG. However, this issue had no impact on missed vaccination opportunities. By April 2020, the stockpile included 4.7 million doses, of which 1.5 million doses were A conjugate and 3.2 million were C-containing, of which 2.9 million were W-containing.

Challenges during the last year were the shortage of air transport capacity, the refusal of some countries to accept shipments received at short notice, and frequent changes in requirements for shipping documents. For meningitis, delays in production of ACW polysaccharide vaccine during 2019 impeded the availability of additional quantities for the stockpile for the 2020 epidemic season.

Market shaping – Gavi roadmap

Margarita Xydia Charmanta, Michael Clark

As production of yellow fever vaccine increases, Gavi estimates that this will enable some 400–600 million people to be vaccinated over the next five years, and potentially up to 1.2 billion people over the coming decade. By 2027 the EYE strategy demand will be mainly for routine immunization. Consequently, it is important to give suppliers a long-term view of expected developments for, as manufacturers see demand level off or drop as major campaigns end, they will need to adjust production accordingly.

In order to ensure a reliable supply of cholera vaccine during the disruptions caused by COVID-19 demands, Gavi provided support to the Korean company Eubiologics through prepayment of part of awarded doses. Another manufacturer stopped its OCV scale-up plans as a result of business priority changes. Following a business acquisition, a company which had a potential pipeline vaccine has likely deprioritized OCV, while no impact on the timelines of another pipeline vaccine has been observed. The timing of the implementation of Gavi's vaccine investment strategy (VIS) for preventive hot-spot use was also delayed by COVID-19. However, the Gavi Board has been asked to approve continued support for preventive OCV use in endemic settings in the interim. Mitigation strategies to address the risk of under- or over-manufacturing capacity are in place and decisions are reviewed every two years.

With regard to meningitis vaccines, the last 12 months saw outreach to manufacturers to seek new ways to improve current supply-side conditions, with the aim to have increased supply availability at sustainable prices and favourable contractual terms. One manufacturer showed interest in discussing further with Gavi and UNICEF SD an eventual supply offer; discussions with Gavi are completed and those with UNICEF SD are ongoing. Also ongoing is decision-making for procurement for the 2021 meningitis season. Gavi's Supply and Procurement Roadmap for multivalent meningococcal vaccines in routine immunization and campaigns will be developed following SAGE recommendation and Gavi's programme design. Alternative use (repurposing) of the meningitis vaccine stockpile doses nearing expiry is to be reviewed by the Gavi Board in December 2020, and it is likely that a new conjugate meningitis vaccine will be prequalified by WHO and made available for supply to Gavi-supported countries in 2022 for outbreak response. It is expected that supplies of CW-containing vaccine will meet the needs of the current ICG stockpile requirement by 2022.

Outbreak response vaccine supply outlook

Hans Christiansen

As reflected by UNICEF Supply Division, during 2021, suppliers are expected to offer their maximum capacity of around 35 million doses of OCV, which will enable the revolving emergency stockpile to be maintained. Availability will depend on demand since suppliers will adjust production to forecast demands from hotspot campaigns. Eubiologics is expanding its production capacity and this process is expected to be completed by the end of 2022. Shantha's production capacity is expected to remain stable as the company has no plans for expansion. Through technology transfer from Hilleman, Bharat is also developing an OCV with possible prequalification in 2022. UNICEF has requested information on expected market entry.

For yellow fever, suppliers are expected to offer a combined total of around 85 million doses during 2021, which would be sufficient to maintain the revolving emergency stockpile of 6 million doses. Demand from routine and preventive campaigns is increasing and long-term forecasting for preventive campaigns will be important to sustain suppliers' availability.

Chumakov is currently expanding capacity and should have more production by 2021. Sanofi's production is expected to remain stable, while the production of Bio Manguinhos is reducing and IP Dakar is currently not producing due to refurbishment.

The meningitis vaccine emergency stockpile is projected to include 4.9 million doses by 1 January 2021. This will include 1.5 million doses of MenA conjugate vaccine and 3.4 million C-containing doses (of which, 3.1 million doses will be W-containing). UNICEF is pursuing options for a further 600 000 doses of C-containing vaccine for the 2021 stockpile, though the date of supply is still not confirmed. When confirmed, these doses will be offered to the ICG for possible contracting. Serum institute of India is in Phase 3 trials for its meningococcal ACYWX conjugate vaccine and is anticipating WHO prequalification in late 2021. UNICEF will rely on WHO's PQ team technical review of the vaccine for potential contracting of the vaccine for the 2022 emergency stockpile.

Discussion

SAGE recommendations for the optimal use of pneumococcal conjugate vaccines and for the use of meningococcal B vaccines are expected in late 2021 or early 2022. The possibility of having 600 000 doses more of polysaccharide vaccine for the next epidemic season was welcomed. There was a request for the stockpile to have longer-lasting stocks to avoid repurposing vaccines. WHO emphasized the need to re-establish the regular calls with OCV manufacturers, stressing that this communication between partners is essential because it provides a better understanding of OCV demand and supply and therefore enables better planning. WHO's Regional Office for Africa stated that wide preventive use of pentavalent vaccine is not expected until 2023 or 2024 at the earliest as it will not yet be used for routine immunization.

2021 is the final year of the meningitis vaccine 4-year tender with UNICEF-SD so a new tender must be issued to solicit proposals from manufacturers for supply starting 2022. Sanofi may make some stocks available, and so potentially may Pfizer. However, the potential for obtaining multivalent doses depends on the size of the contract. Almost all doses in the current stockpile will expire in 2021 so a decision also needs to be made on how to proceed if the SIIPL pentavalent conjugate vaccine is not available by 2022. In any case, UNICEF-SD will need to obtain offers from suppliers. It was pointed out in response to a question that purchasing a lot of unfinished product and filling vials when needed is not viable since one producer will not consider it and others have long timelines for filling and for batch packing release.

The EYE strategy includes a quarterly update of the partnership with manufacturers. In addition, the EYE Supply and Demand Working Group, led by UNICEF SD, works on anticipating demand from countries for vaccine and developing supply projections. UNICEF SD has regular links with manufacturers to inform this work and is the contract holder with manufacturers and has to manage day-to-day issues as well as supply and demand.

The meeting decided to explore modalities for further programme–supplier communication, with strong coordination and collaboration to ensure that the mandate and area of work of each agency are maintained.

Ebola Virus Disease (EVD)

Update on the EVD vaccine stockpile

The first doses of the rVSVΔG-ZEBOV-GP Ebola vaccine, which has been developed by Merck in the USA and is being manufactured by Merck in Germany, will be available in November 2020. The vaccine was tested in trials in 2015 and was shown to be effective in protecting people from the Ebola Zaire virus. Over 340 000 people have been vaccinated with rVSVΔG-ZEBOV-GP vaccine since August 2018 in Burundi, DRC, South Sudan, Rwanda and Uganda, and it has been proven to be safe. In November 2019 the vaccine was licensed by the European Medicines Agency (EMA) under the name Ervebo and prequalified by WHO. The following month Ervebo was licensed by the US Food and Drug Administration (FDA) only for emergency use.

The size of Ebola vaccine stockpile is planned to be 500 000 doses for populations most at risk of EVD. Outbreak response vaccination and targeted preventive vaccination of high-risk populations in the context of an outbreak will be the first priority. Recommendations from SAGE on preventive use outside outbreaks is still pending. However, it will take several years to build the stockpile since the production capacity of Erbevo is limited, and the vaccine will be allocated between the United States government and the Erbevo stockpile. The Ervebo stockpile, which will be funded by Gavi, will be managed by a mechanism (ICG-EboVax) similar to that for cholera, meningitis and yellow fever but with key disease and vaccine specific modifications. The ICG members will decide on vaccine allocation in line with an established set of release criteria. In the event of an outbreak and insufficient Ervebo licensed vaccine is available, the stockpile of investigational rVSVΔG-ZEBOV-GP will need to be used. Merck will maintain investigational rVSVΔG-ZEBOV-GP vaccine in stock, its export will be approved by the FDA, and its use will follow the Investigational New Drug (IND) rules and procedures. The release criteria for investigational rVSVΔG-ZEBOV-GP include that there is insufficient licensed vaccine available and the risk-benefit analysis is favourable. The Governance Oversight Committee (GOC) of the ICG is meeting in October 2020 to consider the new ICG for Ebola vaccines.

Discussion

It was agreed that further discussion is needed on how to use such a limited quantity of vaccine for prevention when there may be another big outbreak a month later. A vaccine request form for its use is being prepared. For other diseases it may be easier to predict what the use and quantities needed will be, but in the case of EVD many things are still not known. It was pointed out that all Ebola outbreaks must be confirmed by a WHO collaborating centre since, in the past, some laboratories have confirmed EVD that later was shown not to be EVD.

It was made clear that priority will be given to the licensed vaccine above the investigational vaccine. There is also a Johnson & Johnson vaccine which was also investigational and has now been licensed in Europe – though conditional on the supply of further information. However, even if this is protective, it is a two-dose vaccine (with the second dose after 60 days) and would therefore be difficult to use for emergency response, although it could be interesting for preventive vaccination. For the non-licensed use of Johnson & Johnson's vaccine, is still subject to SAGE recommendation. For rVSVΔG-ZEBOV-GP vaccine, Merck will ship it to the airport of arrival, with WHO doing the in-country delivery. Devices for

transport of the vaccine have already been developed but, judging by previous Ebola outbreaks, transport to the places where it is needed could be challenging. Training in vaccine management is also planned.

ICG Accountability Framework

Accountability framework – main revisions

Alejandro Costa

Proposals about the ICG's accountability framework were introduced to the meeting. The proposal had been developed for EVD vaccine but was later updated to apply to all ICG vaccines. The accountability framework is a document that defines the roles and responsibilities of the ICG partners – WHO, IFRC, MSF and UNICEF – and the secretariats of the ICG and Gavi. The framework is not a procedure but there may be a need to develop specific SOPs. For instance, each partner could develop SOPs for each activity and some common SOPs would be needed between parties (e.g. for communication, requests, reimbursements).

The accountability framework was undergoing its first review and the presentation proposed several adjustments to specific procedures. It had already been agreed that the framework is a generic document and is applicable to all ICG vaccines, and with Ebola being added it was suggested that this was a convenient point at which to review the document. Each agency/organization would establish an internal mechanism for soliciting expertise and inputs from relevant Ebola disease experts within the organization on outbreak applications as opposed to relying solely on ICG focal points. It was stated that the ICG needed consensus on the main principles, coordination in contact with manufacturers, coordination on funding (with possible new sources), and a broader scope for procurement. It should remain open to alternatives to current arrangements in case they are needed one day. The framework would be reviewed after one year.

Issues raised by the presenter included the need to agree on:

- ICG representatives for EVD stockpile (expertise, consultation);
- a procurement reference group;
- multiple sources of procurement and financing;
- whether to share the accountability framework with ministries of health;
- monitoring and evaluation (M&E) indicators – are they too complicated?
- proposals to the GOC for approval.

Discussion

There was a comment that the indicators in the earlier document were too complex. On the other hand, the accountability framework was introduced relatively recently (2017) being one of the main recommendations of the ICG external evaluation conducted the same year. It was also commented that the use of various funding streams should be de-linked from the single procurement agency discussion. Other comments included the need to finalize the SOPs on access to non-Gavi countries, the preference for one procurement agency, and consideration of when a disease programme can take over from an ICG vaccine stockpile and how to decide whether a stockpile is still needed. Above all, participants agreed that the proposed changes to the accountability framework should be validated by the GOC.

Action points

- All participants to consider the issues raised about the accountability framework and the suggestions proposed and to submit their comments by email by the end of Tuesday 29 September. The ICG secretariat will transmit comments to the GOC as background for its own discussion of the accountability framework.
- Continue the discussion between WHO, Gavi and UNICEF SD regarding the finalization of the SOPs on access to the stockpile by non-Gavi countries

Annex 1. Meeting agenda

Annual Meeting of International Coordination Group (ICG) for Vaccine Provision
23-24 September 2020
Day-1: Chair- Olivier Ronveaux
Day-2: Chair- Laurence Alcyone Cibrelus Yamamoto

Agenda

Time	Topic	Presenter
Day-1:		
14:00 – 14:15	Introduction, Objectives and expected outcome of the meeting	Olivier Ronveaux
14:15 – 15:45	Meningitis- Epidemiological Situation 2019-2020 and review of response and lesson learned (Investigation, campaigns, monitoring & reporting)	Katya Fernandez
	Cholera- Epidemiological Situation 2019-2020 and review of response and lesson learned (Investigation, campaigns, monitoring & reporting)	Malika Bouhenia
	Yellow Fever- Epidemiological Situation 2019-2020 and review of response and lesson learned (Investigation, campaigns, monitoring & reporting)	Jennifer Horton
	COVID-19 impact for campaigns	Mohammad Salim Reza
	Discussion	
15:45- 16:15	ICG performance – review of key indicators	Eduardo Vargas
	Discussion	
16.15-17:15	Agendas from Technical Teams (15 minutes each) • Meningitis-management of expiring vaccine doses, recommended vaccine stockpile for 2021, update on pentavalent vaccine • Cholera- Updates on GTFCC • Yellow Fever- Updates on EYE Strategy • Discussion	• Olivier Ronveaux & Eduardo Vargas • Malika Bouhenia • Laurence Alcyone Cibrelus Yamamoto
17:15-17:30	Conclusion	All participants
Day 2		
14:00 – 14:15	Vaccine procurement and deployment: main issues in 2020	UNICEF SD
14:15- 14:30	Market shaping - Gavi roadmap	Michael Clark & Margarita Xydia Charmanta
14:30-15:15	2021 supply forecast and manufacturing issues	UNICEF SD
15:15-15:45	Update on Ebola vaccine stockpile	Alejandro Javier Costa

15:45-16.30	Accountability framework: main revisions and 2019-2020 M&E outputs	Olivier Ronveaux
16:30-16:55	Action points and way forward	Chair
16:55-17:00	Wrap up & Closing	WHO

Annex 2. List of participants

International Coordination Group (ICG) for Vaccine Provision
Annual Meeting
23-24 September 2020

List of Participants

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Observer		
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Annex 3. Summary of ICG requests (September 2019 – September 2020)

Disease	Request number	Country	Request date	ICG decision	Target population approved	Doses approved
Meningitis	#1/2020	Benin	09 Jan 2020	Partially approved	204,968	261,333
Cholera	#12/2019	Sudan	20 Sept 2019	Approved	1,648,660	3,297,320
	#13/2019	Zambia	21 Oct 2019	Not approved		
	#14/2019	Democratic Republic of the Congo	23 Oct 2019	Approved	480,828	961,656
	#15/2019	Sudan	29 Oct 2019	Not approved		
	#16/2019	Burundi	07 Nov 2019	Not approved	Not applicable	Not applicable
	#17/2019	Bangladesh	07 Nov 2019	Approved	794,002	1,588,005
	#18/2019	South Sudan	29 Nov 2019	Approved	254,392	508,784
	#19/2019	Cameroon	05 Dec 2019	Approved	38,836	77,672
	#1/2020	Democratic Republic of the Congo	10 Jan 2020	Not approved		
	#2/2020	Mozambique	10 Mar 2020	Partially approved	366,712	733,424
	#3/2020	Democratic Republic of the Congo	21 May 2020	Approved	1,051,788	2,103,576
	#4/2020	Uganda	29 May 2020	Approved	78,849	157,698
Yellow Fever	#4/2019	Nigeria	04 Oct 2019	Approved	618,460	680,310
	#1/2020	Uganda	11 Nov 2020	Approved	1,665,402	1,848,596
	#2/2020	South Sudan	03 Ap 2020	Approved	93,000	103,230
	#3/2020	Ethiopia	09 Apr 2020	Partially approved	704,005	781,446

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