ARVAC
ALUMNI REFRESHER VACCINOLOGY COURSE

Written answers to questions not answered verbally

Week 2 - Day 2

Questions for Panel 1:

Questions	Answers from Marta Tufet Bayona
TB is on the list, but told if found successful, then to use! Could you explain!	There are a number of TB vaccines for adolescents/adults in the clinical pipeline. If these trials are successful and vaccines are licensed and WHO's SAGE provides a policy recommendation for their use, then Gavi would open a funding programme to facilitate access to these vaccines in the future
GAVI Country ownership vs. efficiency, effectiveness and anti-corruption...instruments and mechanism?	GAVI promotes country ownership to ensure sustainability and alignment with national health priorities. However, this must be balanced with robust mechanisms to ensure efficiency, effectiveness, and integrity of funding. Instruments such as Joint Appraisals and Transparency & Accountability policies help manage this balance.
how does the GAVi support or SAGE plan for sudden outbreaks of disese in low income country	GAVI supports sudden disease outbreaks in low-income countries by funding emergency vaccine stockpiles (e.g. cholera, yellow fever), providing rapid response funding, and working with countries and partners like WHO and UNICEF to deliver vaccines quickly. It also strengthens health systems to improve outbreak preparedness and resilience.
Questions	**Answers from Melanie Marti**
How is SAGE coping with anti-vax movements?	SAGE, as a policy advisory group, aims to provide evidence-based recommendations that aim increase trust in immunization programmes globally. WHO provides information about vaccines and the diseases they prevent. All content is backed by scientific evidence and reliable research, and primarily designed for the general public and health-care professionals https://www.who.int/teams/immunization-vaccines-and-biologicals/diseases/vaccination-information-hub World Health Organization (WHO) has published a Position Paper on Understanding the Behavioural and Social Drivers of Vaccine Uptake (BeSD) based on SAGE's advice: https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers/behavioural-social-drivers

will hexavalent vaccine be combine with IPV at the age of 4 months?	The age of administration should be guided by national burden and epidemiological data
for Marti, How is WHO working to ensure countries are streamlined on the IA 2030 as priorities are different between them?	Countries are encouraged to develop National Immunization Strategies taking into consideration national priorities guided by the IA2030 targets and regional immunization strategies.
is there any available H5 strain vaccines?	So far, 21 active licenses of H5 containing vaccines are in place. Please see here for further information https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(25)00052-9/fulltext
Can you elaborate more on the SAGE PCV caveat for higher valet PCVs; is Sage suggesting to stick to PCV13 (for example) until high coverage is reached, then only switch to something like PCV20?	SAGE recommends that countries should consider extended-valency PCVs if they offer a better match to the range of serotypes causing disease in their setting but should be aware of potential trade-offs. The PCV position paper will be published end of this month.
Pain mitigation - sounds interesting- any more details please	This would be to present SAGE with new evidence accrued since the issuance of the position paper on reducing pain at the time of vaccination in 2015- https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers/reducing-pain-at-time-of-vaccination
Does SAGE regularly contribute or inform the GVIRF agenda and vice versa? thanks	Global Vaccine and Immunization Research Forum (GVIRF) is the central discussion platform of all research and innovation aspects related to the Immunization Agenda 2030 (IA2030), and specifically Strategic Priority 7, Research and Innovation. While there is no direct SAGE input on the agenda or vice versa, the GVIRF agenda it to date set by partners, including WHO, which convey relevant priority topics, including those identified by SAGE. The SAGE agenda is set through a thorough process, which includes input by partners and stakeholders https://www.who.int/groups/strategic-advisory-group-of-experts-on-immunization/sage-workplan
For varicella/ zoster, the current WHO position paper remains the version of 2014. What is the latest SAGE position on the indirect effect of childhood varicella vaccination on the potential reduced exogenous boosting that is believed to be protective against zoster?	SAGE was presented with evidence on national varicella programmes on herpes zoster epidemiology. The directionality is not yet well understood, that said, SAGE recommends that high coverage levels should be achieved by countries introducing varicella vaccines. The new position paper will be published in November 2025.
Thank you all for the up date. Could you elaborate on the future combination of vaccines to improve adherence? Covid-19-influenza?	This will be discussed by SAGE at its September meeting. Aim is to obtain SAGE guidance on the analysis, prioritization and policy pathway for novel combination vaccines.
Sorry, I wanted to know why it is taking so long for malaria vaccination to be widespread in heavily affected areas?	This question in very context specific and should be targeted at the specific country. WHO has recommendations in place on the use of Malaria vaccines: https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers/malaria

What are SAGE's current recommendations on the use or fractional doses or PCV, in particular dosage and context? Thanks	SAGE recommended that countries with mature routine immunization programmes that have achieved adequate herd protection could consider the off-label use of fractional doses PCV13 (40% of full dose or higher) in a 2p+1 schedule. The PCV vaccine position paper will be published on 26 September
you mentioned that at the Sept SAGE meeting, malaria (3 vs 4 doses) will be discussed: can you elaborate on what will be discussed specifically : whether annual booster will be recommended or not ?	The purpose of this joint session is to present SAGE and MPAG with the latest evidence on effectiveness, safety, impact and programmatic considerations of a 3-dose compared to the currently recommended 4-dose malaria vaccination schedule in perennial (year-round) malaria transmission settings. The SAGE and MPAG are asked to review the Working Group recommendations and address the following questions: 1. Is a 3-dose schedule of malaria vaccine safe and effective? 2. Should a 3-dose malaria vaccine schedule be considered as an alternative option to a 4-dose schedule in some context?
Questions	**Answers from Niklas Danielsson**
will exavalent vaccine be combine with IPV at the age of 4 months?	Hexavalent vaccine is a combination of penta and IPV and contains diphtheria, tetanus, whole-cell pertussis, H. influenzae type B, hepatitis B and IPV. All countries are supposed to give 2 doses of IPV (a handful of countries still have to introduce IPV2). Most LICs and LMICs give IPV1 at 14 wks together with penta 3 and IPV 2 at 9 m together with MR1 but there are many variations. Earlier this year, SAGE advised that IPV can be given with 3 doses as early as at 6, 10, and 14 weeks without a need for additional IPV 'booster' doses. This change the appetite for hexa because it allowed for countries to switch to hexa and not to keep IPV vaccination in the routine schedule.
Why malaria vaccination is impleted largely in africa region?	Because the vaccine protects against the falciparum form of malaria, which is the deadliest form of malaria and dominates malaria transmission on the African continent.

Funding reductions, crazy vaccine policy examples, measles outbreaks.... how to counteract negative consequences for the vaccine policy globally and in resource poor settings in particular in the context of opportunity cost discussions!	This question is impossible to answer in this space but I'll give it a stab. 1) Countries, also LICs must dedicate more domestic resources to their immunization programs. The basic rationale for the Gavi approach is to reduce the costs of vaccines through co-financing. This has been incredibly successful. LIC now have broader vaccine protection than many MICs but coverage has not inceased. Reaching all children in a country is a health system issue and countries must step up and allocate more resources to increasing access to vaccines. 2) US may see increased measles outbreaks due to current policy changes but 98% of all measles deaths are in LICs, on average 100,000 deaths per year. The critical effort is to eliminate measles transmission in LICs, and thereby save lives and reduce the risk of measles importation to the US and the American continent countries. 3) Re-vitalize (re-invison) measles eradication through use of innovative approaches inclusing measles vaccination with Micro-needle Array Patches.
what is the standard definition of zero dose children?	A child who has not received the first dose of a DTP-containing vaccine.
now I understand that the hexavalent vaccine is a combination of penta and IPV, so now my question is, will the hexavalent vaccine be given with opv at the same session ? or it will eliminate the use of OPV?	The polio eradication plan is that IPV vaccination must continue 10 years after global coordinated cessation of bOPV vaccination. The current target for bOPV cessation is 2028 but initiated observers doubts this is still realistic. Most realistically, IPV vaccination will continue for at least another 15 years. OPV cessation is conditional on not detecting and wild polio virus (WPV) or vaccine derived polio virus (VDPV) for 3 years. It is important to remember that while OPV protects against poliovirus infection in the first place, sometimes called intestinal immunity, IPV protects against poliomyelitis (i.e. spread of the polio virus to CNS). Most paralytic cases are now caused by cVDPD, effectively an unintended adverse effect of using OPV.
Timor-Leste experiences a high rate of serious AEFI (abscesses) occurring following hep B birth dose (multi-dose vial) likely due to contamination of the mulit-dose vial. While not solving the underlying issue of safe vaccination practice (IPC), the NITAG is considering recommending a change to single dose vial - however, even better would be use of a CPAD (compact prefilled auto-disable injection system such as Uniject. Is their consideration of a CPAD for hep B becoming WHO PQ and available thru UNICEF?	I wasn't aware of the hep b BD AEFI incidents in Timor-Leste and would appreciate if you could share the information. Currently, Gavi only co-finances the 10 dose vial which restricts the use of single-dose vials for LICs. Hep B vials have a 28-days open-vial use policy under cold chain conditions. I think it would be important to investigate procedures in the delivery wards, particularly if each new dose is drawn with a new needle and if the membrane is cleaned. There used to be a pre-qualified one dose presentation, the monoject, but the high price prohibited its use. A move to one dose vials is probably the most realistic way forward.

thank you for the presentation. when do GAVI or UNICEF think that hepatitis B birth dose can be start in low income countries as systematic for newbonr borned from hepatitis B mother?	Now. There is nothing stopping LICs from introducing the hepB BD and some have. Gavi provides support including co-financing of the vaccine. The largest hurdle is the large proportion of babies born outside of health facilities and how to reach them within 24 hours of birth. Effectiveness of hep B BD vaccination against MTCT drops quickly after 24 hrs. Statistically there is some effect up to 7 days and a late dose will of course protect against horizontal transmission. But if you want to stop MTCT, your really must get to the babies within 24 hrs which means administering the hepB BD 24/7 in health facilities as part of Standard Operational Procedures (SOPs) for delivery care.
is there any guidance on Hep Birth dose for home deliveries	The guidance basically says that there is some benefit against MTCT from giving the birth dose up to 7 days of age, and that a 'late' dose protects against horizontal transmission, so countries should try to deliver the birth dose to home deliveries. The problem is that delivering a birth dose at home is many fold more expensive than delivering the dose on time (within 24 hrs) in a facility. So countries must decide what is most cost-effective, investing in trying to reach mothers at home in time for the delivery of a vaccine and post-partum check-up, or invest in increasing the facility delivery rate which means access to emergency delivery care like post-partum haemorrhage and management of prolonged delivery, and caesarean section.
AI is dependent on a largeamount of data which Africa largely does not have,. How do we ensure does not get left behind further worsening the equity problems	There are many answers to this really important question. In my view, the most important factor is the speed of digital transformation of immunization programs and especially the transition to individual case-based digital vaccination records in LIC. A few countries, India and Rwanda are two, have demonstrated that it is possible to operate with individual digital vaccination records in LMICs. Currently, in most LMICs, immunization data is aggregated at source. I.e. frontline health workers report number of children below 1 year of age an number of children above 1 year of age receiving vaccine doses. This is very blunt monitoring. A child who receives penta 1 at 6 months of age count the same as a child who receives the dose at the recommended age of 6 weeks.
AI is dependent on a large amount of data which Africa largely does not have,. How do we ensure does not get left behind further worsening the equity problems	With case-based vaccination data in an Electronic Immunization Registry (EIR), timeliness of vaccination can be monitored at the temporal unit of one day. You can look at the spread of vaccination around the recommended age and generate theories why some groups of children are late. If an EIR also captures some household socio-economic indicators (household assets, education, family composition etc) this information can be used for AI analysis and shed light on which categories of households are more likely to be late with vaccination and drop-out. Because households with high drop-out share many socio-economic determinants of vaccination, this data can also tell you who the unvaccinated zero-dose children are.

Thank you Niklas for your answer - Timor has been investigating this ongoing issue and despite efforts to provide refresher training to ensure safe vaccination, this is complex to achieve universally in a largely rural/remote population with ~50% home delivery and with high turnover of health workers, so in addition to addressing the underlying issue, a single dose is being considered as a action that could prevent these very serious AEFI..	Timor-Leste is not eligible for Gavi support so the co-financing rules don't come into this equation. If you have tried re-training and supervision with little success, paying the premium and transitioning to a single-dose presentation of hep B vaccine seems like the most logic way forward to me (given that the country can afford it). Pre-qualified single-dose hep-B vaccine is available in the UNICEF Supply Catalogue and can be procured through UNICEF Supply Division. The indicative price per dose is listed for the different presentations. There is a tool that can help you simulate the additional costs of moving to single dose. Moving to single dose reduces open vial wastage, basically to zero, which is a factor to consider. Facilities in remote areas may handle fewer than 10 deliveries per month and therefore have open-vial-wastage. You can mail me at ndanielsson@unicef.org

Questions for Nicki Lurie:

Questions	Answers from Nicki Lurie
Thank you for your excellent talk, Dr. Nicki Lurie. Within the 100 Days Mission, how do we define Day 1? Is it the detection of the outbreak, the release of the genetic sequence, or the official declaration of an emergency?	There are different definitions-most used the declaration of an emergency, but we at CEPI often consider it to be when we recognize that there is a pathogen with epidemic or pandemic potential
For Nicki: How can we be sure to leverage on the existing and known virus will help to predict a vaccine development and avoiding lost of resources on that way?	The reason we are so focused on the viral family approach is to leverage existing and known viruses in that family and the information contained in them. There is no guarantee that doing this will get to 100% but as we have seen in coronaviruses, or influenza viruses, for example, it gives us a head start. I also think the learning how to stabilize prefusion forms, and finding conserved epitopes, both of which are much more efficient with AI assistance can help avoid lost resources
To what extent could the paradigm shift be applied more widely (besides outbreak scenarios)?	The paradigm shift ought to be used much more widely-starting early, taking advantage of a happenstance, doing things in parallel instead of sequence, thinking about outcomes differently can be used for other non outbreak vaccines as well as other MCM development-and likely development of lots of other products
Thanks for the great presentation, Nicki. With the recent learnings from COVID-19, what's the main bottlenecks for the 100 days Project? How could we mitigate the communication delays and misinformation that impacted us so much during COVID-19 pandemic?	In my mind, the greatest scientific bottleneck is finding and validating earlier markers of an adequate immune response. From a policy perspective, its adequate, at-risk financing. Dealing with mis/dis information is a very major challenge, now even in 'peacetime' and we all need to develop and practice much better strategies for dealing with it, whether on line or in-person. Its really dangerous!

To Dr Lurie: thank you for the CEPI update. Does CEPI tackle clinical trial readiness and capacity in the global south (considering that COVID-19 vaccine clinical trials only took place in a few countries)	CEPI has developed and is strengthening clinical trial networks in East and West Africa, and is coordinating with Africa CDC's hub and spoke model, as an example
Any work from CEPI on dengue virus, that continues to cause outbreaks and multitypic live attenuated vaccines are years away form completing trials?	I agree that dengue is an important pathogen. CEPI is not working on dengue as there are other available vaccines
how does one speed up natural immune response (1 slide mentioned one of the steps for emergency use dev of vaccines)	Slide 1 intended to represent discovering and validate earlier markers of the natural immune response.
CEPI is active in supporting local vaccine manufacturing, e.g. through the mRNA hubs. What is the progress to date and your estimate for the future of such initiatives and their contribution to epidemic response?	I wish I had a crystal ball and could predict. For sure, many of these local efforts are making progress, but we also need to recognize that some will either not succeed or not be sustainable for business reasons.
Does CEPI keep a stockpile of vaccines that have been tested at P1 and put on the shelf?	CEPI has begun to maintain reserves of investigational vaccines that have been tested in P1 or P2, with the intent of being able to rapidly generate additional evidence of their efficacy during outbreaks.

Questions for Johanna Fihman:

Questions	**Answers from Johanna**
Good presentation Johanna. Can a country choose to use two vaccines at the same time, for example Rotasiil and Rotarix? In terms of cost and effectiveness, which vaccine would you recommend using, especially in resource-limited situations?	This is very country specific and has many programmatic implications. Whilst some countries may use different products for certain programs(for example pentavalent) it may have multiple implications that should be carefully assessed by countries. There are also considerations related to supply availability for rotavirus vaccines.
Fantastic lecture. Is disease burden a key factor in prioritsation? As it seems some vaccines are being promoted even thoughthe disease burden is not as high as some other diseases with higher morbidity/mortality	Yes disease burden is one of the key factors – prioritization and optimization considerations can be split around importance and feasibility. Disease burden would fall under the importance category.
how can countries with limited resources ensure that vaccine prioritazation and optimization strategies not only reduce costs but also maxime long-term health impact and sustainability?	Vaccine prioritization and optimization is about maximizing health impact within available resources. Cost savings may be considered but should not be the sole objective.