Highlights from the Meeting of the Strategic Advisory Group of Experts (SAGE) on Immunization

22-25 September 2025

(The full report will be published in the Weekly Epidemiological Record on 5 December 2025, and only the wording of the full report should be considered final)

Session 1

Report from the Department of Immunization, Vaccines, and Biologicals.

- Immunization programmes are navigating an increasingly challenging global health landscape. Geopolitical instability, constrained global funding landscape, reduced national budgets for health, and shifting health architectures are testing the resilience of programmes and partnerships.
- The information and trust crisis threatens vaccine confidence and uptake, posing risks to sustaining immunization gains.
- Globally, vaccination coverage has largely rebounded to pre-pandemic levels, with reductions in zero-dose children in several high-burden countries and landmark advances in HPV and malaria vaccine introductions. Yet, global values are averages across countries, where there is high variability across countries on progress. Backsliding in Gavi ineligible middle-income countries, and an increasing number of people living in fragile and conflict settings threaten the global gains.
- Greater national leadership is needed to ensure immunization programmes deliver maximum health impact within available resources. WHO and partners are supporting country ownership through a systematic decision-making process led by national stakeholders.
- Moving forward, WHO's and SAGE's normative role in immunization policy will be more critical than ever to shaping an equitable and resilient future for immunization.

Report from Gavi, the Vaccine Alliance

- Gavi and Alliance partners have supported eligible countries in making measurable progress in reducing zero-dose children, revitalizing HPV vaccination, and accelerating malaria vaccine rollout.
- Funding gaps and sustainability pressures require sharper prioritization and stronger coordination.
- Guidance from SAGE in setting evidence-based priorities will be essential to ensure immunization programmes optimize their vaccine portfolios and continue to deliver impact equitably and sustainably.

Reports from the WHO Regional Offices

- All WHO Regional Offices have been affected by drastic reductions in human and financial resources, which will significantly affect their ability to support immunization activities in their Member States.
- While there has been progress in restoring immunization coverage through catch-up vaccination efforts, immunity gaps persist and have led to large and disruptive VPD outbreaks in several countries.
- There is concern across all the WHO Regions about the potential for further backsliding because of the constrained resources in the current global health environment.
- Efforts are increasingly focused on subnational levels to maximize the impact of available resources, reduce the number of unvaccinated and under-vaccinated children, and advance immunization equity.

Session 2

Immunization Agenda 2030 (IA2030) mid-term review

- The IA2030 mid-term report acknowledged the progress made against impact goals to date and reaffirms that the overall vision and strategic priorities remain relevant even though progress is falling behind for several 2030 targets.
- In an evolving context, SAGE highlighted the importance of the IA2030 partnership to continue supporting countries navigate complex trade-offs, strengthen local monitoring and action cycles, build capabilities to make data-driven decisions based on locally generated evidence, and maintain efforts to integrate immunization into primary health care.
- To enable this, IA2030 structures at the global and regional level should be reviewed to strengthen focus on driving coordinated action towards common priorities at all levels.

Session 3

COVID-19

- There has been a decline in the number of reported cases and deaths due to COVID-19 globally in 2024-2025. The annual uptake of vaccination is low and mainly limited to high-income countries in the WHO regions of Europe, the Americas and the Western Pacific in 2024.
- Variant-adapted COVID-19 vaccines show moderate relative vaccine effectiveness in preventing COVID-19 cases and hospitalizations, though protection wanes by six months.
- The current prioritization Roadmap remains valid, though SAGE advised that the recommendations be reviewed and updated based on the current context and other health priorities in countries.
- SAGE recommended an updated review of the evidence on the effectiveness of COVID-19 vaccines during the Omicron period, with a focus on the effect of vaccination in pregnancy on birth outcomes and infant COVID-19 to reassess the validity of recommendation on vaccination during pregnancy, in the current epidemiological context.

- SAGE approved the process to develop a COVID-19 vaccine position paper based on the updated evidence review and called for continued disease surveillance and vaccine impact assessments.

Session 4

New tuberculosis vaccines

- As of May 2025, there are 16 candidate tuberculosis vaccines in clinical development, 5 of which are in phase 3 trials with a prevention of disease endpoint. One of these candidates, M72/ASO1E could be licensed as early as 2028, depending on trial results.
- SAGE noted that the results of multi-country, multi-region vaccine clinical trials that will only have adequate statistical power to detect efficacy in one or two high tuberculosis burden countries or single-country clinical trials can be extrapolated to other countries unless there are major epidemiological differences. Immunobridging studies, if a suitable correlate of protection is established, or Phase 4 impact studies may be required to determine effectiveness in other settings or in priority groups where clinical trials were not sufficient for subgroup assessment.
- Considering that only a limited number of Interferon Gamma Release Assay (IGRA) negative subjects will be enrolled in the pivotal clinical trials, SAGE advised that provisions should be made to collect adequate data on the safety and immunogenicity of the vaccine in IGRA negative individuals to inform recommendations since such individuals are likely to be vaccinated during programmatic rollout of the vaccines.
- In anticipation of potential trial outcomes (specifically related to differences in IGRA positive vs IGRA negative individuals), SAGE proposed conducting scenario analyses, risk assessment and contingency planning, including the potential efficacy in IGRA negatives, to proactively align and inform decision making. It will be important to ensure commitment from developers and donors to generate these additional data and evidence.
- Based on current knowledge, SAGE cautioned that inclusion of asymptomatic tuberculosis as a component of a composite clinical trial endpoint may compromise the demonstration of efficacy against severe tuberculosis, which is considered the most robust strategy for vaccine licensure. Therefore, SAGE supported the development of a roadmap to generate evidence on the characteristics of asymptomatic tuberculosis to enable decision-making with regards to the use of composite endpoints in pivotal tuberculosis vaccine trials.

Session 5

Combination vaccines

- Combination vaccines could help countries to ease delivery of existing vaccines and introduction of new ones by reducing the number of injections to be administered at a single visit, thereby improving acceptance and uptake, and reducing health worker workload.
- SAGE supported the development of a framework to identify, analyze and prioritize novel combination vaccines along a rigorous process aimed at optimizing public health impact.

- SAGE highlighted the importance of engaging with national and regional immunization technical advisory groups to identify regional priorities for combination vaccines.

Session 6

Poliomyelitis

- SAGE was very concerned about continued transmission of wild poliovirus in Pakistan and Afghanistan, the persistent transmission of circulating vaccine-derived poliovirus type 2 (cVDPV2) in many African countries, and continued detections of cVDPV2 in wastewater samples in Europe. The need for increased efforts to improve routine immunization coverage and reaching zero-dose children was stressed.
- SAGE reaffirmed its support for the safe cessation of bivalent oral poliovirus vaccines (bOPV) from routine immunization and urged that the necessary resources to achieve safe bOPV cessation be mobilized.
- SAGE recommended the use of fractional doses, including intradermally administered doses, of Sabin-based inactivated poliovirus vaccines (IPV) in a similar way to the use of fractional doses of Salk-based IPV.
- SAGE reiterated that bOPV-using countries introducing the whole-cell pertussis hexavalent vaccines[1] should continue administering bOPV without change in the number of bOPV doses in routine immunization schedule, until further guidance on bOPV cessation is provided.
- SAGE expressed its support for the expanded use of the novel type 2 oral poliovirus vaccine (nOPV2) as part of the response to reduce cVDPV2 transmission in select geographies with persistent transmission of cVDPV2.
- SAGE strongly underscored that polio eradication cannot be achieved by technical interventions alone. While improving routine immunization coverage, vaccination campaigns, surveillance, and outbreak response remain essential, the decisive factor is sustained national political leadership and accountability at every level. An innovative consolidated approach and governance structure, uniting technical know-how with political resolve, is urgently needed.
- Further, SAGE noted that a broader discussion on overall achievability of eradication plans, and contingency plans should be initiated in a future SAGE meeting. SAGE wants this to include clarifications on SAGE's responsibility and its accountability within the GPEI ecosystem and clarity on those of other GPEI functions (e.g. strategy committee).

Session 7

Malaria vaccines

- After a review of all available evidence, showing that the four-dose malaria vaccine schedule provides greater protection against clinical and severe malaria than a three-dose schedule in

[1] Containing diphtheria, tetanus, whole-cell pertussis, hepatitis B, *Haemophilus influenzae* type b (Hib), and inactivated poliovirus antigens

moderate to high transmission settings, SAGE and the WHO Malaria Policy Advisory Group (MPAG) reaffirmed its recommendation for the use of the four doses as the recommended schedule.

- The case-control study embedded in the Malaria Vaccine Implementation Programme (MVIP), including children aged < 5 years shows that a 4-dose schedule reduces severe malaria cases by around 54% through the study period, and the fourth dose provides a 30% incremental effectiveness above 3 doses in reducing severe malaria. There was no evidence of rebound among children who missed the fourth dose.
- SAGE recommends that countries align the timing of the fourth dose with the timing of the administration of other vaccines and, where appropriate, other health interventions administered in the second year of life, thereby reducing the additional delivery burden.

Session 8

Influenza A(H5) vaccines

- SAGE recommended that countries should consider issuing recommendations on the use of available licensed influenza A(H5) vaccine(s) for the interpandemic[2] and emergence[3] periods when this aligns with their public health priorities. Such recommendations should be based on a careful review of the evidence using the evidence-to-recommendations framework.
- The primary objective for the potential use of currently licensed influenza A(H5) vaccines for the interpandemic and emergence periods should be the prevention of severe disease in individuals at higher risk of infection with influenza A(H5) viruses.
- Based on existing epidemiological data, SAGE recommended targeting the following groups for vaccination, based on their risk of exposure: laboratory workers who handle influenza A(H5) viruses; first responders in zoonotic influenza outbreaks; health workers who evaluate and manage suspected or confirmed human cases, including potential vaccinators; and people with ongoing contact with animals or their environments in geographic areas where animal/human infections have been reported.

[2] Defined as no human cases of the virus being reported, although animals may be infected. [3] Defined as sporadic human cases or clusters of human cases of influenza A(H5) are detected, but no sustained human-to-human transmission.
[Source: Preparedness and Resilience for Emerging Threats (PRET). Module 1: planning for respiratory pathogen pandemics. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/376312) accessed 30 September 2025)]