Human Vaccines & Immunotherapeutics

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/khvi20

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To cite this article: Sara Boccalini, Angela Bechini, Marco Del Riccio, Birgit Weinberger, Jacek Wysocki, Domenico Martinelli, Ole Wichmann, Tiina Likki, Greet Hendrickx, Pierre Van Damme, Chloé Wyndham-Thomas, Paolo Bonanni & Jade Pattyn (2025) Strategies for introducing and implementing vaccines for adults into national immunization programs in Europe: Good practices and key insights of the adult immunization board meeting, Human Vaccines & Immunotherapeutics, 21:1, 2451487, DOI: 10.1080/21645515.2025.2451487

To link to this article: https://doi.org/10.1080/21645515.2025.2451487

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Published online: 17 Jan 2025.

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HUMAN VACCINES & IMMUNOTHERAPEUTICS
2025, VOL. 21, NO. 1, 2451487
https://doi.org/10.1080/21645515.2025.2451487

MEETING REPORT

OPEN ACCESS

Strategies for introducing and implementing vaccines for adults into national immunization programs in Europe: Good practices and key insights of the adult immunization board meeting

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ABSTRACT
In April 2024, the Adult Immunization Board convened a technical meeting to explore the latest strategies and identify exemplary approaches regarding the implementation of vaccines for adults into Europe's National Immunization Programs (NIPs). The meeting was built around three pillars: decision making for introducing a new vaccine, implementation, monitoring, and evaluation. The increasing number of new vaccines available in a context of competing health priorities warrants transparent and evidence-based decision-making processes for vaccine introduction. In Europe, burden of disease, vaccine efficacy or effectiveness, and safety are universally used decision-making criteria. While economic evaluations and the quality of evidence are being increasingly considered, public acceptance, equity, and operational criteria remain underutilized. Vaccine implementation requires planning and coordination. Implementation activities discussed during the meeting were vaccine program goals, target population identification, communication, training of healthcare professionals, and involvement of pharmacists. Once operational, NIPs are to be monitored in terms of safety, effectiveness, and impact. Implementation science as well as behavioral and cultural insights can be used to identify tangible interventions to improve uptake. Meeting discussions allowed to identify adult vaccine implementation barriers and possible strategies to overcome them. Enhanced cooperation and coordination throughout the Europe region were recognized as critical components of progress.

ARTICLE HISTORY
Received 24 December 2024
Accepted 7 January 2025

KEYWORDS
Vaccination; introduction; implementation; National Immunization Program; National Immunization Technical Advisory Group; health policy; surveillance; pharmacovigilance; public health; adults; at-risk population

Introduction

The processes of vaccine introduction and program implementation are complex and involve multiple sectors. They require meticulous assessment, planning, and coordination. Moreover, vaccine programs need to evolve implementing new vaccine development, growing evidence, changing population demographics, and infectious disease epidemiology. In Europe, vaccine strategies are progressively shifting from a child-based focus to a life-course approach.[1] This change is primarily due to better understanding of vaccine-preventable diseases (VPDs) in adults and their consequences in this population and an aging population. In addition, development and availability of new vaccines for this age-group contributes to the fact that programs are shifting toward a life-course approach. In 2019, Cassimos et al. studied the vaccination policies for adults in 42 European countries. Vaccine programs for adults were in place in all included countries, but with significant differences regarding the number of vaccines included, vaccine schedules, target population, and implementation-frame (e.g., mandatory versus non-mandatory).[2,3]

In light of these changes, and aware of differences across European countries, the Adult Immunization Board (AIB) – an independent advisory board with the aim of providing evidence-based guidance on fundamental technical and strategic issues, while monitoring the progress of adult immunization programs at European and (sub)national levels[4,5] — convened a meeting in April 2024. This technical meeting aimed to explore the latest strategies and identify exemplary approaches regarding the introduction and implementation of vaccines for adults into National Immunization Programs (NIPs). The meeting was built around three pillars: decision making for introducing a new vaccine, implementation, and monitoring and evaluation. Here, we summarize the data gathered during the meeting and provide valuable insights on adult vaccine introductions and implementation strategies in Europe.

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Materials and methods

The AIB technical meeting was held in Prague, Czech Republic, on April 18–19, 2024. Speakers for the meeting were subject-matter experts, identified through their contributions to the field by a PubMed Medline, backward citation chaining, and gray literature search. Speakers came from different disciplines, geographical settings, and institutions. The presentations, discussions, and key takeaways are summarized in this manuscript. The complete report will be available at www.adultimmunizationboard.org.

Results

Decision making

Decision-making criteria

The key criteria used for deciding on the introduction of new vaccines for adults have been mapped and weighted. Donadel et al. conducted a systematic literature review (SLR) to identify criteria used for vaccine (for adults) decision-making processes. The criteria most frequently identified were: burden of disease, vaccine efficacy and effectiveness, vaccine safety, economic evaluations, vaccine impact on health outcomes, and the quality of the evidence.[6] Criteria included in less than 50% of processes were accessibility, equity and ethics, feasibility issues, vaccine acceptability, delivery issues, political priority, affordability, financial sustainability, and funding sources. Compared to the findings of an SLR published in 2012,[7] an increase in utilization of economic evaluations and in attention to the quality of the evidence underlying a decision was observed. Beyond decision-making criteria, successful vaccine policymaking required availability of evidence-informed recommendations, national governance, political will, and policy dialog.[6]

In Europe, evidence-informed recommendations are generally provided by the country's National Immunization Technical Advisory Group (NITAG), an independent multidisciplinary body of national experts. NITAGs typically have an advisory role on vaccine introductions, although in certain countries, such as Romania, their recommendations are binding for the government.[1] In 2021, in the context of the European Joint Action on Vaccination (EU-JAV), the Italian National Institute of Health led a survey of NITAG representatives, or their equivalent, to collect the main criteria used for vaccine recommendation development in European countries.[1] Disease burden and availability of financial resources were the highest rated criteria, while the presence of alternative vaccines, implementation, logistic issues, and expected acceptability were rated among the lowest. Ethical aspects (right to be protected, informed consent, and protection of confidentiality)[7] rated high, above efficacy-effectiveness -safety data and cost-effectiveness analysis (CEA).

Country examples of vaccine decision-making processes

In Germany, the Standing Committee on Vaccination (STIKO) – 12–19 members – is the NITAG. All vaccines recommended by STIKO become free of charge for Germany's citizens after the recommendation and scientific background paper are reviewed and endorsed by the Federal Joint Committee. The development of a STIKO recommendation follows a defined process of eight core-steps[8]: 1) prioritizing to select which vaccine to discuss, 2) setting the goal of the vaccination, 3) setting PICO (Population, Intervention, Control, Outcome) questions to allow the systematic assessment of vaccine efficacy, effectiveness, and safety, 4) performing an SLR where needed, 5) rating bodies of evidence using GRADE (Grading of Recommendations Assessment, Development, and Evaluation), 6) exploring additional questions such as disease burden, expected impact based on mathematical models, feasibility, and equity, 7) developing an evidence-to-decision table that summarizes the judgment and research evidence for each criterion used in the decision-making process, and[8] defining the recommendation. CEA is not required, but can be used by STIKO as one criterion to compare the efficiency of different vaccination strategies. The decision process and its results are detailed in the background paper of each STIKO recommendation.[9]

In Belgium, the NITAG resides within the country's Superior Health Council (SHC).[9] The NITAG is composed of over 70 members and coordinated by a dedicated secretariat. To generate or update a recommendation, a working group composed of experts in the related field is formed. Their proposal is presented in a plenary meeting to achieve a consensus document. CEA are not included in Belgium's NITAG assessments but performed separately by the federal Healthcare Knowledge Centre (KCE). While the SHC and KCE are federal institutions, decision making on vaccine introduction and implementation is organized at the regional level. Vaccines included in the regional immunization programs are free of charge or partly reimbursed. At present, no regional immunization program exists for (older) adults, but individuals can seek federal reimbursement for specific vaccine indications.

Implementation activities

Implementation science

Implementation research involves the rigorous analytical study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine healthcare and prevention.[10,11] It includes the study of factors that influence the behavior of healthcare providers (HCPs) and organizations across three domains: the recommendation (e.g., complexity, compatibility, visibility), the context of implementation (e.g., social, political, HCP-related factors), and the implementation strategies (e.g., planning, education, financial incentives). Hence, it can be highly dependent on the specific region/country. Implementation science can be used to identify a broad range of improvement factors to reduce evidence-to-practice gaps, and to develop frameworks for the design and evaluation of vaccine programs.

Setting vaccination targets

Vaccine program goals and targets should allow for adequate planning and program monitoring. At the international level, the World Health Organization (WHO) sets the targets for public health emergency response strategies. In 2020, the WHO defined the 2030 targets for the road toward elimination

of cervical cancer as a public health problem: 1) 90% of girls fully vaccinated with the human papillomavirus (HPV) vaccine by the age of 15 years, 2) 70% of women screened using a high-performance test by the age of 35 years, and again by the age of 45 years; and 3) 90% of women identified with cervical disease receive treatment (90% of women with pre-cancer treated and 90% of women with invasive cancer managed).[12] The 90% vaccination coverage target remains far out of reach for most of the countries in the EU. In 2022, the mean HPV program performance coverage in the WHO European Region was only 65% for the first dose and 60% for the second dose.[13] Various strategies to improve program performance have been identified, including gender-neutral campaigns, comprehensive and equitable delivery to reach vulnerable groups, and the use of country-specific critical immunization thresholds.[14] Other strategies include the extension of the upper age limit for catch-up vaccinations that pair HPV vaccination to HPV screening in older women (e.g. HPV FASTER),[15,16] and the use of off-label single-dose vaccination.[17]

For influenza, the WHO immunization target in older adults has been set at 75%.[18] The heavy disease burden and evidence of lower vaccine effectiveness in this risk group warrants this high target.[19] For the autumn-winter season 2021–2022, Denmark was the only European Union (EU) member state to reach this goal.[20] Governments should sustain and further leverage the efforts made during the COVID-19 pandemic, during which preexisting influenza vaccination programs were successfully strengthened.[20,21] Pillars to improve influenza vaccination coverage include: data collection, targeted communication, vaccine promotion for specific populations, facilitated access to vaccination, improved vaccine reimbursement, multi-stakeholder accountability, HCP engagement, awareness of the burden and severity of disease, knowledge of influenza vaccination benefit, and multi-faceted recipes tailored to each countries' health system[21,22]

Defining and estimating target populations

Vaccine program planning and monitoring, as well as vaccine coverage calculations, require the definition, size estimation, and assessment of characteristics of the target populations. For child-based vaccine programs, target population estimates are typically based on live births and surviving infant numbers, while estimates for older children, adults, and specific risk groups are more challenging to capture. Multiple data sources should be used, including civil registrations and vital statistics, census and projections, population registries, electronic immunization registries, modeling or even satellite images, with each source having advantages and limitations. The accuracy of target population estimates obtained from these sources should be assessed using a systematic approach, and technical guidance on how to proceed has been provided by the WHO.[23]

The method for calculating vaccine coverage should be considered when estimating target populations. In HPV programs, both program coverage (coverage according to schedule and eligibility criteria) and vaccine coverage by age are used. These are separate calculations using different target populations, each with their own set of challenges. Also, vaccine target populations may evolve over time, generating increased complexity for target population estimates. An illustrative example is the COVID-19 vaccination campaign, that sequentially targeted priority groups, the whole (adult) population, and now older adults and high-risk groups.

Involvement of pharmacists

Pharmacist intervention, whether facilitating, educating, or administering vaccines, is an added value for vaccine implementation and uptake among adults,[24–26] particularly for populations that remain unreached by General Practitioners (GPs) and nurses. This added value is related to the high convenience and accessibility of pharmacists. In the EU, 60% of residents have access to the nearest pharmacy within a 5-min walk.

The use of pharmacists in European vaccine programs is growing. Many countries used the COVID-19 vaccination program as a catalyst or starting point for this progress. Currently, influenza and/or COVID-19 vaccination are offered at pharmacies in 15 European countries (Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Latvia, Luxembourg, Poland, Portugal, Norway, Romania, Switzerland, and UK) and nine countries also offer other vaccines (Denmark, France, Greece, Ireland, Italy, Norway, Portugal, Switzerland, and the United Kingdom).[27] The roles and responsibilities given to the pharmacists, including the legal framework, prescription possibilities and reporting obligations, contribution to uptake, and level of training, vary widely across countries. As the involvement of pharmacists in vaccine programs is relatively recent, data on their contributions is limited. In Ireland, the involvement of pharmacists resulted in an increase in uptake, through both vaccination by pharmacists and increased vaccinations by GPs, indicating a synergic effect through collaboration and/or competition.[28]

Training of HCPs

HCPs, including GPs, are confronted daily with vaccine-related questions, yet they do not have strong training on immunization in their initial curriculum. Tailored and continuous education should be offered to all HCPs (doctors, nurses, pharmacists, mid-wives, etc). Although a recognized necessity, the time constraints of HCPs, the required funding, and the constant advancement of knowledge pose challenges to effective training. In March 2022, the International Collaboration on Advanced Vaccinology Training (ICAVT) was created to facilitate vaccine education, by providing an up-to-date list of globally available courses, fostering collaborations between courses, and creating opportunities for resource pooling.[29] The collaboration currently covers 35 courses, from all regions of the world.

Communication to the public

Communicating with the public requires certain prerequisites: a good knowledge of the evidence-base around the vaccine and the disease burden, and where to easily find the relevant data and figures, a prior knowledge of the population's acceptance and attitudes toward vaccination, and both financial and human resources. Successful vaccine communication can be achieved through trust, transparency, availability, and flexibility. Trust is to believe *someone* is good and honest and will not

harm you (e.g., public health official, HCP, government), or that *something* is safe and reliable (the vaccine). Trust can be gained through transparency, in which all knowns, both positive or negative effects, and all unknowns around the vaccine are communicated. Communicating on uncertainty may have mixed results on trust. In high trusting societies, such as Norway, communicating on uncertainty is believed to build trust.[30]

Social media allows for direct communication with the public and is an excellent listening post to detect remaining concerns that are circulating. Social media requires a high level of availability, with adequate staffing and resources to rapidly respond and moderate comments according to a clear set of predefined rules. However, media platforms are not universally effective, and a diverse range of communication channels tailored to specific populations should be employed. These may include traditional media, magazines, tabloids, focus groups, and local influencers like community and religious leaders.

Lessons learnt from recent vaccine implementations

The lessons learnt from the COVID-19 vaccination programs are opportunities for future improvement. Identified challenges include ensuring equitable vaccine access globally, manufacturing sufficient quantities, safely transporting and delivering vaccines, determining fair vaccine allocation, encouraging the uptake of vaccines, considering ethical implications of vaccine passports and other vaccine requirements, and adapting clinical and health research systems.[31] Moving forward, multisectoral engagement with the identification of health policy enablers and barriers is needed to establish a foundation for change. Furthermore, a harmonization of vaccine policies across the European region should be made, when possible, with effective communication around necessary divergences. Also, adaptive and well-trained personnel to deliver and communicate about vaccines is needed. Digitalization (digital vaccination records, digital solution for recall/reminders, or digitization of reporting to vaccination registers/assessment of vaccination coverage) is also one of the lessons learnt from the pandemic, where many countries quickly established such solutions and tried to maintain them after the pandemic. These initiatives require political will and financing, as well as cooperation, collaboration, and coordination.[31]

Lessons can also be learnt from the introduction of Respiratory Syncytial Virus (RSV) vaccinations for adults aged ≥60 years in the US, following the 2023 recommendations by the Advisory Committee on Immunization Practices (ACIP).[32] Vaccination rates in the first season of roll-out were low, reaching a mere 20%. The vaccines' high price, with insurance plans not yet mandated to cover RSV, and the complexity of the recommendation (stipulating a shared clinical decision-making between the HCP and the patient) likely drove this low uptake. The CDC has since implemented actions to increase RSV vaccine uptake such as tailored communications, regular collaborations with key stakeholders, provision of educational resources, and in-depth interviews to identify barriers and enablers. In 2024, the CDC recommendations were updated to simplify RSV vaccine decision-making.[33]

Conversely, the pertussis vaccination program of pregnant women introduced by Denmark has been a great success. Initially introduced in 2019 as a temporary offer with a surge in cases, the program became permanent in 2024 after several program extensions.[34] Denmark has universal healthcare coverage financed by taxes that allows for free and equal access to vaccines. Maternal vaccination is offered in weeks 25 or 32 of gestation at an already established visit with the woman's GP. These visits have high compliance and trust levels. High media attention around infant pertussis disease played a role in this success. In 2023, an 85% coverage rate was recorded and the first signs of impact on infant pertussis burden may be showing.[34] Continuous monitoring will be needed to assess not only the program performance, but also to evaluate 1) the effect of a recent legal amendment that allows midwives to vaccinate pregnant women, and 2) the arrival of RSV maternal vaccines in the market, which expands the range of vaccines recommended during pregnancy. Indeed, an important disadvantage of Denmark's maternal vaccination strategy is that COVID-19 and influenza vaccines are offered separately at vaccination centers and not by the GPs.

Monitoring and impact assessment

Impact evaluation: using behavioral and cultural insights to increase vaccine uptake

Behavioral and cultural insights (BCI) is a comprehensive approach to health behaviors that involves understanding and addressing the contextual and individual factors that affect health behavior. The BCI approach can help understand the reasons for low uptake in certain groups and develop evidence-informed policies, services and communication strategies targeting health behaviors, improve health and well-being, and reduce inequities.[35]

The Tailoring Immunization Programs (TIP) approach of the WHO can be used to support the application of BCI,[36] alongside the Tailoring Health Programs (THP) approach.[37] Both TIP and THP build upon an adaptation of the COM-B (Capability, Opportunity, Motivation for Behavioral change) model of behavior, and the Behavior Change Wheel[38] and can be broken down into four stages: (1) situation analysis (use of available data to define target groups, understand the problem, and zoom in on groups experiencing gaps in coverage), (2) research (insights research on identified target groups to identify their barriers and drivers to vaccination), (3) intervention design (design tailored interventions based on insights to close gaps in coverage), and (4) implementation and evaluation, with revision if needed. Together, these stages create an evidence-informed theory of change, describing the key elements of the process from problem to solution. This allows to be explicit on why a given intervention is selected and to evaluate its effect.

Cost assessment of immunization program

The cost of a vaccination program can be assessed in multiple ways, with various levels of complexity and exhaustivity. Nevertheless, basic ballpark numbers can sometimes be

sufficient to demonstrate high impact. This was shown through a recent study looking into health expenditures and immunization costs in Spain.[39] Vaccinating according to the country's 2023 NIP costs 1,500€ for a healthy person's lifetime, from birth to 83 years of age. For a person with chronic disease, the amount increases to 1,735–3,160 €. Assuming 100% coverage, the yearly costs for vaccination according to the 2023 NIP is ~565 million €. This amounts to approximately 23% of health expenditure for prevention and public health services, and only 0.5% of total health expenditure, a low cost for a high impact on VPD burden. For example, the average cost of income for influenza and meningitidis accounts for 3,276 and 9,712€, respectively. Putting numbers and costs into perspective can be used for promoting and strengthening immunization programs.

Monitoring vaccine effectiveness (VE)

VE studies, based on observational data and data linkage, allow the evaluation of vaccination-induced protection in the real-world setting (world population, field conditions), as opposed to the controlled environment of randomized clinical trials. VE studies are essential to estimate and monitor vaccine-induced protection in different risk groups and over time, and they can provide rapid information to inform and guide policy decisions.

VE research in the EU was conducted by I-MOVE (Influenza – Monitoring Vaccine Effectiveness in Europe)[40] between 2007 and 2022 and is now under the ECDC VEBIS umbrella (Vaccine Effectiveness, Burden, and Impact Studies)[41]. The primary objective of the program is to estimate COVID-19 and influenza VE in the EU and European Economic Area. VEBIS is publicly funded and uses well-established study networks, existing surveillance systems, and electronic registers to collect data. Ongoing studies cover four populations: community-dwelling individuals, HCPs, primary care attendees with acute respiratory infection, and patients hospitalized with severe acute respiratory infection. VEBIS studies apply common protocols and pool multi-country results to increase sample sizes and result precision. Validity of data sources, country differences, long-term sustainability, and robustness in crisis, have been among its challenges. Nonetheless, the platform successfully informs the WHO influenza vaccine strain selection committee and provides timely reporting to key stakeholders regarding COVID-19 vaccines.[42,43]

Safety monitoring of COVID-19 and other vaccine for adults in the EU

Both the European Medicines Agency (EMA) and EU Member States continuously monitor vaccine safety to ensure any possible risks are detected and managed as early as possible. Post-marketing safety monitoring is ensured through multiple pathways: extended clinical trials data (phase IV), medical literature, post-authorization safety studies, and spontaneous reports from patients and HCPs, including those captured by EudraVigilance, the European database of suspected adverse reactions to medicines.[44] The foundations of good safety monitoring are prompt detection, evaluation, communication, and high-level transparency to protect public health and ensure public's trust. Good data are essential, not only on the adverse events themselves, but also on patient vaccine exposure data and on the background incidence rates of adverse events of special interest (AESI).

In a pandemic context, all safety assessments methods (observed versus expected analysis, imbalance analysis that compares vaccines, time to AESI onset) are to be combined to allow for rapid benefit-risk evaluations. Risk minimization activities are equally essential: a good risk management plan (RMP) including traceability of vaccines, periodic safety update reports, and a skilled team for signal management and communication of the data. For COVID-19 vaccines, safety monitoring was unparalleled, with multiple vaccine innovations, exposures of high-risk populations, and new clinical entities (e.g., thrombosis with thrombocytopenia syndrome). Moreover, global mass vaccination led to a volume of adverse events data of 500–1000 events per week to assess and evaluate at the European level. Lessons learnt from the safety monitoring of COVID-19 vaccines have been published in a joint report by EMA and the Heads of Medicines Agencies (HMA) and are to be leveraged for pandemic preparedness.[45] Communication (including infodemics) and cooperation were among the flagged items.

Barriers to the effective introduction and implementation of vaccines for adults in NIPs, and strategies to overcome them

In a dedicated break-out session of the technical meeting, primary barriers to the effective introduction and implementation of vaccines for adults into NIPs, as well as strategies to overcome them were identified and discussed. These are summarized in Table 1.

Discussion

The AIB technical meeting provided key insights on the introduction and implementation of vaccines for adults in European countries, specifically on decision-making processes, planning and management activities, and vaccine program monitoring and evaluation.

The increasing number of new and improved vaccines available in a context of competing health priorities warrants transparent and evidence-based decision-making processes when deciding on the introduction of a vaccine in a NIP. In Europe, burden of disease and benefit–risk balance that oppose vaccine efficacy and effectiveness to safety, are universally used criteria for decision making on adult vaccine introduction. Economic evaluations are being increasingly integrated in the decision process, while public acceptance, equity, and operational criteria seem to be less of a priority, but this is changing in a number of countries.

Vaccine introduction and implementation require careful planning, coordination, and organization. Activities include target population identification, distribution and access, managing logistics and infrastructure, comprehensive cost predictions, tailored vaccine communications, and adequate training of HCPs, all within a legislative framework. Once operational, vaccination programs are to be monitored in terms of safety, effectiveness, and impact. Pre-defined targets help evaluate and adapt a program. Implementation science

Table 1. Barriers to the introduction and implementation of vaccines for adults, and strategies to overcome them.

Primary barriers	Strategies to overcome barriers
Evidence-generation and data availability:	
- High-quality data related to burden of disease, vaccine efficacy and effectiveness (particularly in certain risk groups), post-authorization safety, duration of protection, and/or country-specificities can be insufficient.	Collaborations, mutualization of efforts, and combining of datasets when possible. Increased NITAG collaborations and sharing of agenda, positions, and documentation (e.g., SLRs). Increased visibility in EU-NITAG initiatives and deliverables. Harmonization and sharing of CEA models.
Feasibility issues and ethical considerations:	
- Fitting a new vaccine in schedule. - Risk of vaccine fatigue with multiplicity of vaccines (e.g., maternal vaccination). - Impact on the uptake of other vaccines. - Non-equity in vaccine accessibility.	Reflection over prioritization and vaccine accessibility.
Political and financial barriers:	
- Vaccines seen as costs rather than investments. - High complexity related to sub-national coordination and negotiations with stakeholders in certain countries.	Political engagement. Common negotiation of prices. Harmonization of regulations (e.g., guidelines governing interactions between decision-makers and industry).
Population and HCP confidence and literacy:	
- Vaccine hesitancy. - Multiplicity of vaccines. - Divergences in country policies. - Maintaining trust under uncertainty. - Lack of institutional trust. - Cultural and language barriers. - Lack of data on public perception. - Low perception of risk. - Poor training of HCWs on immunization.	Tailored and transparent communication. Open publication on decision-making. Working with community champions. Collaboration with specialist societies. Collaboration with social science specialist to improve understanding of the BCI and targeted communication. Surveys on public perceptions. Harmonizing medical curricula across EU to establish a minimum standard for infectious disease prevention and regular training of HCW on vaccinations
Infrastructure:	
- Production and manufacturing capabilities and sustainability. - Insufficient infrastructure to ensure good accessibility. - Insufficient vaccination documentation.	Innovation funding models for vaccine Diversification of access points. Improved registration system./documentation of vaccination Digitalization.

Abbreviations: BCI: Behavioral and Cultural Insights: CEA: cost effectiveness analysis; EU: European Union; HCP: healthcare provider; SLR: systematic literature review; NITAG: National Immunization Technical Advisory Group.

and BCI can also be used for a rigorous assessment of implementation, aiming to identify tangible interventions to improve vaccine uptake.

Adults are a heterogeneous population and the barriers to the implementation of a vaccine program will differ according to the targeted (sub) population. Nonetheless, common barriers exist. The recurring solutions identified were a need for enhanced cooperation, collaboration, and coordination across the European region. Although most vaccine programs in Europe are evolving toward life-long strategies, many inter- and intra-country differences remain.[2,3] Rather than a caveat, these differences should be considered as a unique opportunity to identify and leverage vaccine implementation success stories and problem-solving strategies.

Acknowledgments

We would like to thank all those who made this AIB technical meeting possible: AIB advisors, speakers, participants, and in particular Enrico Banchelli, Stephanie Williams, and Brenda Janssens of the AIB secretariat for the logistical support.

Disclosure statement

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: VaccinesEurope provides an unrestricted grant to support the activities and meetings of the Adult Immunization Board (AIB). However, it's important tonote that the secretariat of the AIB retains full control over meeting topics,meeting reports and content on the website. The AIB and its advisorsplace great importance on maintaining strict operational and scientificindependence. The secretariat operates in full compliance with the ethicalguidelines of the Universities of Antwerp and Florence.

Funding

The AIB is supported by an unrestricted grant from Vaccines Europe (www.vaccineseurope.eu) and applies the ethical rules of its hosting universities, the University of Antwerp, and the University of Florence, to guarantee strict operational and scientific independence throughout its activities.

Notes on contributor

Marco Del Riccio is a researcher at the University of Florence, Department of Health Sciences. He earned his medical degree in 2017 and specialized in Hygiene and Preventive Medicine in 2022. Mr. Del Riccio is a dedicated member of the scientific secretariat of the Adult Immunization Board (AIB). His primary research interests lie in the epidemiology and prevention of infectious diseases. Throughout his career, he has made significant contributions to the field, authoring over 50 publications in international peer-reviewed journals and participating in numerous national and international conferences. Mr. Del Riccio's work is characterized by a commitment to improving public health through rigorous research and innovative preventive strategies.

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Ethical statement

This research did not involve human or animal participants, nor personal or sensitive data. According to institutional guidelines, no ethical approval was required.

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