



Overcoming barriers to adult immunization in Europe: A decalogue for policy action by the Adult Immunization Board

Sara Boccalini^{a, *}, Marco Del Riccio^{a, *}, Birgit Weinberger^b, Domenico Martinelli^c, Angela Bechini^a, Greet Hendrickx^d, Paolo Bonanni^a, Pierre Van Damme^d, Per Ljungman^e, Sotirios Tsiodras^f, Odile Launay^g, Giovanni Gabutti^h, Antoni Torresⁱ, Roman Chlibek^j, Johan Flamaing^{k, l}, Robert Steffen^m, Helena Maltezosⁿ, Stefania Maggi^o, Jacek Wysocki^p, Ligita Jancoriene^q, Heidi Larson^r, Alojz Ihan^s, Thomas Weinke^t, Daphné Holt^u, Mariano Votta^v, Javier Díez-Domingo^w, Jade Pattyn^d

^a Department of Health Sciences, University of Florence, Florence, Italy

^b Institute for Biomedical Aging Research, Universität Innsbruck, Innsbruck, Austria

^c Policlinico Riuniti Foggia Hospital, Hygiene Unit, Department of Medical and Surgical Sciences, University of Foggia, Foggia, Italy

^d Centre for the Evaluation of Vaccination (CEV), University of Antwerp, Antwerp, Belgium

^e Centre of Allogeneic Stem Cell Transplantation Unit (CAST), Karolinska University Hospital and Department of Medicine, Huddinge, Karolinska Institute, Stockholm, Sweden

^f University of Athens Med School 4th Dept of Medicine, Athens, Greece

^g Université Paris Cité, Assistance Publique Hôpitaux de Paris, Inserm, CIC Cochin Pasteur, Paris, France

^h Coordinatore GdL Vaccini e Politiche vaccinali SIt, Former University of Ferrara, Ferrara, Italy

ⁱ Hospital Clinic of Barcelona. UB. IDIBAPS. CIBERES Pulmonology, Barcelona, Spain

^j Faculty of Military Health Sciences, University of Defence, Czech Vaccinology Society, Czech Medical Association, Department of Epidemiology, Hradec Kralove, Czech Republic

^k Department Geriatric Medicine, UZ Leuven, Leuven, Belgium

^l Department of Chronic Diseases, Metabolism, and Ageing, KU Leuven, Antwerp, Belgium

^m University of Zurich Epidemiology, Biostatistics and Prevention Institute, Zurich, Switzerland

ⁿ National Public Health Organization Directorate for Research, Studies and Documentation, Athens, Greece

^o National Research Council, Aging Branch Institute of Neuroscience, Padua, Italy

^p Department of Preventive Medicine, Poznan University of Medical Sciences, Poznań, Poland

^q Vilnius University, Institute of Clinical Medicine, Clinic of Infectious Diseases and dermatovenerology, Vilnius University Hospital Santaros klinikos Centre of Infectious Diseases, Vilnius, Lithuania

^r Vaccine Confidence Project / London School of Hygiene & Tropical Medicine / University of Washington, London, UK

^s Institute of Microbiology and Immunology, Faculty of Medicine, University of Ljubljana, Ljubljana, Slovenia

^t Klinikum Ernst von Bergmann Klinik für Gastroenterologie und Infektiologie, Potsdam, Germany

^u The Coalition for Life course Immunisation (CLCI), Haut Corlay, France

^v Cittadinanzattiva-Active Citizenship Network (ACN), Via Cereate 6, 00183 Rome, Italy

^w Área de Investigación en Vacunas, Fundación para el Fomento de la Investigación Sanitaria y Biomédica de la Comunitat Valenciana (FISABIO-Public Health), 46020 Valencia, Spain

ARTICLE INFO

Keywords:

Adult vaccination
Vaccination policies
Policy recommendations
Surveillance
Communication
Engagement
European immunization programs

ABSTRACT

Adult immunization is a critical yet underdeveloped area within European public health, as fragmented systems and implementation barriers persist. With a growing burden of vaccine-preventable diseases among adults due to demographic aging and emerging pathogens, this policy comment aims to address key barriers impeding a high vaccination uptake, including data availability, feasibility issues, political and financial constraints, vaccine confidence and literacy among the population and healthcare providers, and access issues and organization. Drawing on insights from Adult Immunization Board (AIB) meetings and discussions, a decalogue of actionable policy recommendations is proposed to overcome these barriers. This comprehensive strategy underscores the

* Corresponding author at: Viale GB Morgagni, 50134, Florence, Italy, Department of Health Sciences, University of Florence.

E-mail address: marco.delriccio@unifi.it (M. Del Riccio).

<https://doi.org/10.1016/j.hlpt.2026.101179>

Available online 17 February 2026

2211-8837/© 2026 Fellowship of Postgraduate Medicine. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

need for coordinated, multidisciplinary efforts and sustained political commitment to optimize adult immunization programs, leveraging lessons from the recent COVID-19 pandemic response.

Background

Vaccines have historically been developed and administered with a primary focus on protecting children; however, adults now comprise a critical population segment for immunization, due both to a better understanding of vaccine-preventable conditions such as influenza, pneumococcal disease, herpes zoster, and respiratory syncytial virus (RSV) and the continuous emergence of infectious threats (e.g., COVID-19, pandemic influenza, Mpox). Moreover, demographic aging in Europe magnifies the consequences of such infections [1]. However, despite growing recognition of the importance of protecting adults, adult immunization programs in many European countries are either lacking or, when they do exist, lack the coherence, coverage, and those investment that characterize childhood vaccination [2]. Adult vaccination coverage across Europe remains low and highly variable. Influenza uptake among older adults ranges from under 20 % in several Central and Eastern European countries to over 70 % in the Netherlands and the UK [3,4], while pneumococcal vaccination rarely exceeds 30% [5]. Data on herpes zoster and pertussis vaccination are sparse [6], and only about half of EU/EEA countries operate interoperable adult immunization registries [7]. Persistent financing, organizational, and trust barriers [8,9] directly inform the ten actions proposed below. Shortfalls stem not only from inadequate awareness, lack of recognition of their importance, or misinformation but also from deeper structural, financial, and political barriers.

Drawing from discussions and insights produced during recent Adult Immunization Board (AIB) meetings [10–13], this policy comment outlines the primary barriers to effective adult immunization and then proposes a decalogue of policy actions. These actions can help policymakers and health stakeholders promote data-driven decisions, reduce fragmentation, increase trust, and ultimately increase vaccine uptake among Europe's diverse adult populations.

Context and key barriers

Methods

Barriers and actions were identified during the April 2024 AIB technical meeting in Prague: participants included AIB board members, the scientific secretariat, and invited subject-matter experts (around 18) with backgrounds in public health, epidemiology, infectious diseases, NITAG processes, vaccinology, behavioral science, pharmacovigilance, and health economics. Invited experts were selected based on documented contributions to adult immunization and identified through literature searches. The meeting followed a structured agenda covering three domains—decision-making, implementation, and monitoring and evaluation—with presentations, plenary discussions, and, in particular, a dedicated break-out session to identify key barriers and policy actions. Draft items were consolidated by the scientific secretariat and refined through two rounds of discussion during and after the meeting; consistent with AIB procedures, consensus was defined as broad agreement without sustained objection, rather than formal voting. All ten actions included in the decalogue reflect items that met this level of agreement. No major proposals were excluded, although several were rephrased for clarity. No attrition among participants was noted during the process.

Evidence and data gaps

A fundamental challenge to adult immunization is the limited availability of high-quality, real-time data on disease burden and vaccine effectiveness. Surveillance systems often fail to capture conditions

like pneumococcal pneumonia, herpes zoster, or RSV, and vaccination coverage is rarely monitored with rigor due to fragmented data systems [14]. Underdiagnosis, underreporting, and poor linkage between data sources impede NITAGs and policymakers from assessing disease burden, conducting cost-effectiveness analyses, or designing tailored strategies [15]. Data on high-risk groups, such as immunocompromised adults, are especially limited for new vaccines, complicating rollout and communication between healthcare providers (HCPs) and citizens.

Cost and financing limitations

Adult vaccines, particularly newer ones, often carry a high per-dose cost, raising concerns about affordability and sustainability for national healthcare systems, especially when adding them to already stretched immunization schedules [16]. Currently a trend is seen in more vaccines for adults being targeted at risk groups because it's not cost-effective for all (e.g. the entire birth cohort or everyone over 65 years of age). These challenges are often compounded by the absence of coordinated procurement strategies within countries and across Europe, resulting in fragmented negotiations and sometimes prohibitively high prices that dissuade adoption.

Organizational fragmentation and heterogeneity

Introduced initially in children, immunization systems may not be well-prepared to meet the different needs of adults (e.g., pregnant women, older adults, adults with specific comorbidities, travelers, occupational risk groups). In some cases, coordination among local, regional, or national authorities can lead to differences in recommendations, unwanted logistical challenges, and unclear roles and responsibilities in delivering and monitoring adult vaccinations (i.e., general practitioners, different specialists, vaccination services). Although NITAGs aim to advise nationally, their recommendations may not always be implemented uniformly or often experience significant delays [17].

Limited integration into routine care pathways

Unlike childhood vaccination schedules, which are well-defined and systematically administered, adult immunization frequently remains an *ad hoc* add-on to other services; missed opportunities arise when adults are seen for routine check-ups, care management, or specialist or hospital visits, but are not systematically offered recommended vaccines [18]. Moreover, lacking, inconsistent, and/or fragmented vaccination registries make it challenging to track vaccination-status and target interventions.

Vaccine confidence and public trust

Public trust in adult vaccines depends on clear and open communication about their safety and effectiveness: yet trust can be quickly eroded by shifting guidance (as seen during COVID-19), misinformation and disinformation circulating, or incomplete data on emerging vaccines [19]. National authorities and health experts may underestimate their impact on public trust by using the wrong communication messages, tools, and channels. Moreover, HCPs themselves may lack the training or resources to address adult immunization effectively, leaving patients uninformed or skeptical.

A decalogue of actions

Below are ten short, action-oriented policy recommendations. Each addresses multiple barriers identified above, but all converge on a central goal: strengthening the introduction and implementation of adult immunization programs in Europe (Fig. 1).

Strengthen NITAG collaboration

Encourage more frequent and structured cross-border coordination among NITAGs to streamline evidence reviews, cost-effectiveness models, decision making processes, and vaccine recommendations. Expanding the EU/EEA NITAG platform could reduce duplicated analyses and help align recommendations and vaccination schedules in Europe.

Consolidate adult disease surveillance

Establish or improve shared reporting protocols for conditions primarily affecting adults, such as RSV or herpes zoster in older adults and immunocompromised individuals, or community-acquired pneumonia: this would involve coordinating data collection efforts, standardizing case definitions, and ensuring consistency in epidemiological measures and outcome across countries. Improve the linkage of vaccination data, disease surveillance and other healthcare databases, within and between European countries.

Coordinate pricing and joint procurement

Lessons from the COVID-19 vaccine rollout show that joint procurement can be highly effective in negotiating fair prices and ensuring sufficient supply. Extending these mechanisms to routine adult immunizations (e.g., influenza, pneumococcal, herpes zoster, RSV) could increase affordability, reduce duplication of tender processes, and diminish inequities between countries with different financial capacities.

Improve access points and logistics

Expand the range of vaccination administration sites, including pharmacies, community centers, long-term care facilities, and workplaces, with flexible hours that accommodate working adults. Establish user-friendly booking systems (including text reminders or digital platforms) to make appointment scheduling straightforward. Consider advanced distribution or “pop-up” clinics during peak seasons (e.g., influenza season).

Invest in innovation and digitalization

Adopt or upgrade electronic immunization systems that document

adult vaccinations across multiple providers and access points. A harmonized registry ensures that a patient's vaccination status is accessible wherever they seek care, prevents errors (e.g., duplicate shots), and enables real-time coverage monitoring. In the long term, these data can inform targeted interventions (e.g., reminders), vaccine forecasting, and resource allocation. Beyond registries, countries should explore broader digital health tools such as mobile health apps, patient portals, and digital vaccine passports, ways to deliver personalized reminders and facilitate communication between providers and patients.

Enhance communication and community partnerships

Develop clear and consistent communication strategies around adult vaccines, involving a wide range of stakeholders such as scientific societies, healthcare providers, patient organizations, community leaders, and citizens' associations. These groups can play an important role in building trust and supporting informed decision-making by acting as credible and relatable voices within their communities. Equip healthcare providers with targeted training and evidence-based tools to effectively prevent and counter misinformation, engage in empathetic conversations, and build public confidence in vaccines. Collaborate with media outlets to disseminate accurate information and ensure that messaging reaches diverse audiences.

Engage community leaders and specialist networks

Broaden outreach efforts by engaging community leaders, such as politicians, faith leaders, senior advocates, and local influencers, to build trust and promote the importance of adult immunization within diverse populations. Their established credibility and relationships within communities can help dispel misconceptions and encourage vaccine uptake. Collaborate with politicians, key opinion leaders, and policymakers to advocate for adult immunization programs, ensuring these efforts are visible and supported at all levels of society.

Integrate vaccination into routine and pathways of care

Health systems should embed adult vaccination prompts directly into clinical workflows: for instance, electronic medical records could flag pneumococcal, herpes zoster, RSV or influenza vaccine prescriptions during chronic disease follow-ups, or pertussis, influenza, COVID-19, and RSV in pregnant women. This approach reduces missed opportunities, normalizes vaccination as part of ongoing disease management, and aligns preventive goals with broader healthcare strategies.

Leverage health technology assessment (HTA) for transparency

Use the new European HTA Regulation to build multi-country evaluations of new adult vaccines. Jointly developed and transparent HTAs

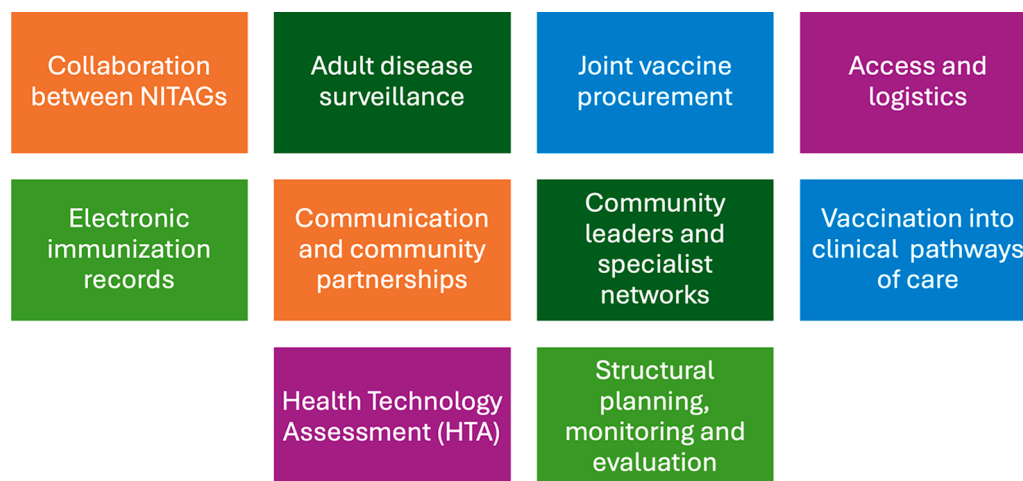


Fig. 1. The ten policy recommendations for the adult immunization.

can generate robust evidence on cost-effectiveness and facilitate consistent messaging across different health systems. The resulting recommendations carry greater credibility, potentially accelerating policy adoption and funding decisions.

Establish structural planning, monitoring and evaluation

Implementing adult immunization programs requires careful planning, including identifying target groups, ensuring equitable access, managing logistics, estimating costs, and developing tailored communication within a regulatory framework. Post-launch, programs must be monitored for safety, effectiveness, and impact, with clear targets guiding adjustments. Implementation science and behavioral interventions can support evaluations and uptake. Publishing real-world evidence sustains political commitment and trust, while continuous feedback loops ensure programs remain responsive to new vaccines, evolving data, demographic shifts, and changing epidemiology.

Discussion

Implementing the above actions would address many of the systemic issues that limit adult immunization uptake in Europe. For example, better surveillance (Action 2) directly helps NITAGs (Action 1) develop robust recommendations, while joint procurement (Action 3) might alleviate cost burdens that often hinder vaccine introduction. Similarly, expanding access points (Action 4) and embedding vaccination prompts in routine care (Action 8) tackle operational shortcomings that perpetuate low coverage. Strengthening communication efforts and engaging stakeholders (Actions 6 and 7) are essential in dispelling public fears and misinformation, establishing the trust needed for long-term success. HTA-based transparency (Action 9) could further unify the decision-making process, moving from siloed national models to shared European evaluations that provide robust, generalizable data.

While each country may adapt these actions according to national priorities, the fundamental principle is consistent: a more accountable, coordinated, and evidence-based approach that accounts for Europe's diverse populations and respects local contexts. Ultimately, bridging the gap between introduction (formulating well-founded recommendations) and implementation (secure funding, distributing, monitoring vaccinations, and building trust) requires sustained political will, cross-border collaboration, and consistent alignment among key stakeholders, including health authorities, scientific experts, healthcare providers, and communities [10]. Adult immunization in Europe shall no longer be a peripheral concern but rather be an integral part of safeguarding public health, particularly against the backdrop of demographic aging, emerging infectious pathogens, the increasing number of immunocompromised individuals, and the rising prevalence of chronic diseases.

Achieving higher coverage across Europe remains a significant goal, and it will require sustained political momentum, coordinated efforts, and careful policy commitment: this decalogue of actions represents a strategic roadmap for policymakers, health systems, and community stakeholders, offering practical measures to build trust, reduce fragmentation, and optimize resource use.

Authors' contributions

All authors contributed to writing and reviewing the current version of the manuscript. All authors read and approved the final edited version. The views and opinions expressed in this manuscript are those of the authors.

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.

Competing interests

The authors declare the following competing interest: Vaccines Europe provides an unrestricted grant supporting the activities and meetings of the Adult Immunization Board (AIB). The AIB secretariat retains full control over meeting topics, meeting reports, and website content. The secretariat operates in compliance with the ethical guidelines of the Universities of Antwerp and Florence.

Ethical approval and consent

This article is a policy commentary based on expert discussion and publicly available data.

It did not involve human participants, patient data, or animal experimentation.

Therefore, ethical approval and informed consent were not required.

Acknowledgements

The authors thank all participants of the Adult Immunization Board (AIB) meetings for the valuable discussions that informed this policy commentary.

References

- [1] Eurostat. Available online: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_structure_and_ageing#:~:text=On%201%20January%202023%2C%20the,EU's%20population%20reached%2044.5%20years. Accessed 10 January 2025.
- [2] ECDC. Vaccine scheduler. Available online: <https://vaccine-schedule.ecdc.europa.eu/>. Accessed 10 January 2025.
- [3] ECDC. Seasonal influenza vaccination and antiviral use in eu/eea member states 2023–2024. Stockholm: ECDC; 2023.
- [4] Eurostat. Population vaccinated against influenza by age group. Available at: <https://ec.europa.eu/eurostat>. Accessed 16 January 2025.
- [5] ECDC. Pneumococcal vaccination in the EU/EEA: policies and coverage rates. Stockholm: ECDC; 2022.
- [6] European Commission. State of vaccine confidence in the eu 2022. Brussels: European Commission; 2022.
- [7] ECDC. Immunisation information systems in the EU/EEA: 2023 update. Stockholm: ECDC; 2023.
- [8] OECD/WHO. Health at a glance: europe 2022. Paris: OECD Publishing; 2022.
- [9] Larson HJ, Schulz WS, de Figueiredo A, et al. The state of vaccine confidence in the eu 2022. Brussels: European Commission; 2022.
- [10] Boccalini S, Bechini A, Del Riccio M, et al. Strategies for introducing and implementing vaccines for adults into National Immunization Programmes in Europe: good practices and key insights of the Adult Immunization Board meeting. Accepted for publication in Hum Vaccin Immunother. 2025.
- [11] Pattyn J, Del Riccio M, Bechini A, et al. The Adult Immunization Board (AIB): a new platform to provide multidisciplinary guidelines for the implementation and optimization of adult immunization in Europe. Vaccine 2024;42(1):1–3. <https://doi.org/10.1016/j.vaccine.2023.11.060>.
- [12] Pattyn J, Bonanni P, Adult Immunization Board working group. Assessing the health burden of vaccine-preventable infections in European adults: challenges and opportunities translated into action. Euro Surveill 2023;28(48):2300791. <https://doi.org/10.2807/1560-7917.ES.2023.28.48.2300791>.
- [13] Bechini A, Boccalini S, Del Riccio M, et al. Overview of adult immunization in Italy: successes, lessons learned and the way forward. Hum Vaccin Immunother 2024;20(1):2411821. <https://doi.org/10.1080/21645515.2024.2411821>.
- [14] Tang JW, Lam TT, Zaraket H, Lipkin WI, Drews SJ, Hatchette TF, Heraud JM, Koopmans MP, INSPIRE investigators. Global epidemiology of non-influenza RNA respiratory viruses: data gaps and a growing need for surveillance. Lancet Infect Dis 2017;17(10):e320–6. [https://doi.org/10.1016/S1473-3099\(17\)30238-4](https://doi.org/10.1016/S1473-3099(17)30238-4). OctEpub 2017 Apr 28. Erratum in: Lancet Infect Dis. 2017 Jul;17(7):689. 10.1016/S1473-3099(17)30346-8. PMID: 28457597; PMCID: PMC7164797.
- [15] Martinelli D, Quattrone F, Fortunato F, et al. Role of the National Immunisation Technical Advisory Groups in 13 European countries in the decision-making process on vaccine recommendations. Euro Surveill 2023;28(43):2300131. <https://doi.org/10.2807/1560-7917.ES.2023.28.43.2300131>.
- [16] Plotkin S, Robinson JM, Cunningham G, Iqbal R, Larsen S. The complexity and cost of vaccine manufacturing - an overview. Vaccine 2017;35(33):4064–71. <https://doi.org/10.1016/j.vaccine.2017.06.003>.

- [17] European Commission. Vaccination programmes and health systems in the European union. Available online: https://health.ec.europa.eu/document/download/3d13f27c-3567-427c-821f-a828c45a481b_en. Accessed 16 Jan 2025.
- [18] Domnich A, Orsi A, Ogliastro M, et al. Exploring missed opportunities for influenza vaccination and influenza vaccine co-administration patterns among Italian older adults: a retrospective cohort study. *Eur J Public Health* 2023;33(6):1183–7. <https://doi.org/10.1093/eurpub/ckad155>.
- [19] Larson HJ. Defining and measuring vaccine hesitancy. *Nat Hum Behav* 2022;6(12):1609–10. <https://doi.org/10.1038/s41562-022-01484-7>.