

agreement. Following the three sessions, participants were invited to complete a survey in which they rated the level of impact and priority of each recommendation that emerged from the initiative, using a 1-to-10 scale. A final consolidated technical report was subsequently drafted by the research team, reviewed by the Steering Committee, and then circulated to all participants for final review and feedback. This report was developed based on participants' insights and the available scientific literature.

The "+Longevity Think Tank" recommendations focus on three strategic priorities: investing in prevention and healthy aging, strengthening the health system's capacity and resilience, and securing the adult population's commitment to vaccination (Table 1).

Among other targeted recommendations, the think tank participants offered valuable insights into an optimal adult vaccination schedule for Portugal, aimed at advancing lifelong vaccination coverage. The goal was to inspire changes to the existing National Vaccination Program, reinforcing a societal commitment to lifelong vaccination and recognizing prevention as a vital component at every stage of life. Rather than developing a separate schedule, the emphasis should be on advancing a unified approach that reshapes the narrative—positioning vaccination as a cornerstone of

disease prevention and a key driver of improved quality of life.

A proposed vaccination schedule for adults in Portugal

The think tank panel, composed of 19 experts, collaboratively contributed insights toward a proposed adult vaccination schedule for Portugal, which was subsequently refined and consolidated by the research team. This proposal represents what participants view as the ideal vaccination schedule, while remaining aligned with current epidemiological trends, vaccine efficacy and effectiveness, and economic considerations (Table 2).⁵

Lifelong vaccination awareness narrative

The think tank participants share a common vision: shifting the vaccination narrative to emphasize a lifelong approach is essential. Incorporating a dedicated segment for the adult population within the National Vaccination Program offers a top-down implementation strategy that facilitates faster adoption. At the same time, think tank participants emphasized the importance of raising awareness among healthcare professionals and the general public about the benefits of lifelong vaccination. As noted—and in line with practices in several European countries—the

Table 1 – Recommendations of the "+Longevity Think Tank"

Area	Recommendation
Investment in prevention and healthy aging	Adult vaccination program
	Literacy narrative for adult vaccination and longevity
	Integration of mechanisms in the preventive approach
	Evaluate the impact of vaccination in addressing Global Health challenges
	Redefining management indicators to strengthen the vaccination strategy
	Personalization in data collection and management
Health system capacity and resilience, along with community synergies	Models to incentivize community prevention
	Strengthening the role of long-term care and personalized healthcare units in intervention efforts
	Strengthening existing capacity and fostering synergies to enhance surveillance efforts
	Assessment study on barriers to adult vaccination access
	Innovative funding models for vaccination
	Multiannual planning in vaccine procurement
Ensuring the adult population's commitment to vaccination	A platform for sharing best practices in vaccination strategy and coverage management
	Co-funding of complementary interventions in vaccination coverage
	Transparency and quality in communication and evidence dissemination
	Population segmentation of narratives and lines of action
	Simulation study and impact assessment of vaccination strategies in real life
	Multisectoral collaboration to advance literacy promotion
	Strategic alignment with the Action Plan for Active and Healthy Ageing
	Investment in strategies for infodemiological management
	Interventions supported by behavioral science algorithms

Table 2 – Proposed vaccination schedule for adults in Portugal

Infectious disease	Vaccination coverage assumptions
Influenza (seasonal flu)	Universal for people aged 60 and over
Influenza (high dose)	Long-term care home residents and Individuals aged 75 and older—ideally extending to those 65 and above—and/or those with comorbidities that place them in a high-risk group
COVID-19	Universal (annual)
Pneumococcal disease	Universal for individuals aged 65 and older, or those with comorbidities that place them in a high-risk group
Respiratory Syncytial Virus	Applicable to all individuals aged 65 and over, as well as those with comorbidities that place them in a high-risk group
Tetanus-Diphtheria-Pertussis	Universal every 25 years until the age of 65 and Universal every 10 years from the age of 65
Herpes Zoster	Universal from the age of 50 or from the age of 18 in high-risk groups
Human Papilloma Virus	Up to the age of 46 years , for both men and women

use of targeted communication tools to support awareness campaigns aimed at the adult population is regarded as essential. Moreover, the importance of tailoring communication strategies to specific sub-populations within the adult group—such as different age cohorts, risk groups, migrant communities, and others with potential disparities in vaccination coverage—has been emphasized as a means to maximize protection and enhance quality of life.

Implementation

As emphasized by the Think Tank participants, implementing the concept of lifelong vaccination requires that management, governance, scientific validation, budgeting, and logistical frameworks align with those already established in the National Vaccination Program. To strengthen the vaccination policy agenda, it is recommended to introduce additional indicators—such as quality-of-life metrics—that capture broader dimensions of health and well-being alongside coverage rates. This approach offers a more accurate measure of success and reinforces the effectiveness of the proposed strategy.

Synergies with other social actors

To effectively raise awareness and support implementation, participants proposed establishing synergies—among others—with the Ministry of Social Security, local municipalities, and the occupational health network. These collaborations would foster a multidisciplinary and multisectoral approach, improving vaccination coverage by leveraging every healthcare interaction as an opportunity for immunization. This novel vaccination paradigm seeks to systematically translate evidence into comprehensive strategies that actively promote lifelong well-being and a culture of health consciousness.

Call for action

The public health challenges we face today, particularly regarding vaccination, call for decisive action from political and executive leaders to establish a compelling narrative and vision highlighting the benefits and need for lifelong vaccination. The agreement among national experts on this issue reflects a clear intent to move forward with its implementation.

PREVIOUS AWARDS AND PRESENTATIONS

The results of the study were publicly presented at two events: the first at the Portuguese Parliament on September 24th, 2024, and the second at the IMPRESA building (Portugal) on November 18th, 2024. Although the results were publicly presented, they have not been presented in a scientific context or submitted/published in any journal.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the valuable insights provided by all Think Tank participants, namely, Ana Clara Silva, António Teixeira Rodrigues, Cândida Abreu, Carmen Garcia, Diana Costa, Gustavo Tato Borges, José Hermínio Gomes, Klára Dimitrovová, Mónica Seidi, Sara Cerdas and Sofia Duque.

The authors acknowledge MagiC for its support under the FCT project – UIDB/04152 – Centro de Investigação em Gestão de Informação (MagiC)/NOVA IMS).

The authors have declared that no AI tools were used during the preparation of this work.

AUTHOR CONTRIBUTIONS

LM, MC: Original draft, review & editing.

CH: Investigation, review & editing.

MTR: Review & editing.

DF: Project administration, review & editing.

JD: Conceptualization, methodology, formal analysis, investigation, visualization, project administration, funding acquisition, review & editing.

ACF: Supervision, review & editing.

CM, FF, FG, HL: Investigation, supervision, review & editing.

All authors approved the final version to be published.

CONFLICTS OF INTEREST

FF declares that, over the past 36 months (reporting to January 2025) he has received funding research and/or

clinical trials from Merck, Sharp & Dohme (MSD). Additionally, he has served as lecturer for MSD, GSK, AstraZeneca, Sanofi, Novavax, Gilead, Bial, Hipra, and Roche; has also been a member of the scientific advisory boards of MSD, GSK, AstraZeneca, Sanofi, and Hipra.

All other authors have no conflicts of interest to declare.

FUNDING SOURCES

This study was financially supported by GlaxoSmith-Kline (GSK), which had no involvement in any stage of the development of the scientific work.

REFERENCES

- Bloom DE, Zucker LM. Aging is the real population bomb. 2023. [cited 2025 Mar 25]. Available from: <https://www.imf.org/en/Publications/fandd/issues/Series/Analytical-Series/aging-is-the-real-population-bomb-bloom-zucker>.
- Doherty TM, Del Giudice G, Maggi S. Adult vaccination as part of a healthy lifestyle: moving from medical intervention to health promotion. *Ann Med*. 2019;51:128-40.
- World Health Organization. Vaccines and immunization. 2025. [cited 2025 Mar 25]. Available from: https://www.who.int/health-topics/vaccines-and-immunization#tab=tab_1.
- Boschiero MN, Palamim CV, Camargo TM, Marson FA. The rise of old villains: the vaccination downfall worldwide. *Pulmonology*. 2025;31:2466924.
- Supporting Active Ageing Through Immunisation (SAATI) Partnership. Adult vaccination: a key component of healthy ageing: the benefits of life-course immunisation in Europe. 2013. [cited 2025 Mar 25]. Available from: https://ilcuk.org.uk/wp-content/uploads/2018/11/Adult-vaccination_a-key-component-of-health-ageing.pdf.
- Paget J, Danielle Iuliano A, Taylor RJ, Simonsen L, Viboud C, Spreeuwenberg P. Estimates of mortality associated with seasonal influenza for the European Union from the GLaMOR project. *Vaccine*. 2022;40:1361-9.
- van Oorschot D, Vroling H, Bunge E, Diaz-Decaro J, Curran D, Yawn B. A systematic literature review of herpes zoster incidence worldwide. *Hum Vaccin Immunother*. 2021;17:1714-32.
- Tavabe NR, Kheiri S, Dehghani M, Mohammadian-Hafshejani A. A systematic review and meta-analysis of the relationship between receiving the flu vaccine with acute cerebrovascular accident and its hospitalization in the elderly. *Biomed Res Int*. 2023;2023:2606854.
- Wu X, Yang H, He S, Xia T, Chen D, Zhou Y, et al. Adult vaccination as a protective factor for dementia: a meta-analysis and systematic review of population-based observational studies. *Front Immunol*. 2022;13:872542.
- European Centre for Disease Prevention and Control. Vaccine scheduler. 2025. [cited 2025 Mar 23]. Available from: <https://vaccine-schedule.ecdc.europa.eu/Scheduler/ByCountry?SelectedCountryId=167&IncludeChildAgeGroup=true&IncludeAdultAgeGroup=true&SelectedVersionId=56>.