Adult Immunization Board Technical meeting

Advancing vaccination strategies for the older adults: insights into epidemiology, immunity, and implementation

Summary

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Definitions

- **Adult immunization**: administration of vaccines (active immunization) or antibodies (passive immunization) to individuals who are 18 years of age or older in order to protect them against various infectious diseases, before or after exposition.[1]
- **Older adults:** The United Nations defines "older adults" as persons 60 years of age or older, although this age limit may vary from country to country. For the purposes of this meeting, we have defined "older adults" as those aged 50 and over to ensure the broadest possible inclusion.[1]
- **Vaccines targeting older adults:** This meeting will focus on the following 6 vaccine preventable infections (VPI)[2]
  - Influenza
  - Shingle
  - Pneumococcal
  - COVID-19
  - RSV
  - Tdap

[1] Source: AIB secretariat
[2] Source: AIB adult vaccines tracker

Meeting objectives

Objective 1. Clarify the definition of older adults in the context of vaccination by considering factors such as chronological age, comorbidities, and biological markers like immunosenescence and frailty.

Objective 2. Review and discuss vaccines and vaccination programs targeting older adults across Europe.

Objective 3. Address the unique challenges and opportunities in conducting vaccination studies, and especially clinical trials, with older adults.

Objective 4. Explore the mechanisms and factors affecting the efficacy, effectiveness, safety and durability (including boosters) of vaccine responses in older adults and discuss strategies (like adjuvants and higher doses) to enhance immune responses. Discuss specific characteristics of different vaccines for older adults.

Objective 5. Discuss implementation of vaccination in older adults at the policymakers, organizational and population levels. Identify strategies, including best practices and successes, to increase vaccination coverage in both community and other care settings, and address communication and logistical challenges to ensure program sustainability and equity.

Meeting objectives

Objective 1: Clarify the definition of older adults in the context of vaccination by considering factors such as chronological age, comorbidities, and biological markers like immunosenescence and frailty.

Clarify definition of older adults in the context of vaccination by considering factors such as **chronological age**

- Europe's 80+ population will triple by 2050. WHO Europe promotes healthy ageing as a life phase, not a burden → aging is living (UN Decade of Healthy Ageing 2021–2030).
- **Healthy Ageing**: Focuses on maintaining functional ability through intrinsic capacity and supportive environments. Achieving this requires broad societal efforts outside of just the health sector.
- The WHO Public Health Framework for Healthy Ageing identifies a twin track approach that supports the healthy ageing of both current and future older populations, through four core action areas:

    1. Revolutionizing our Commitment on Prevention Across All Ages
        Example: How can we integrate vaccination into routine health checks for non-communicable disease (NCD) management?
    2. Creating Environments where Everyone Can Thrive at Any Age
        Age friendly communities that support healthy ageing e.g., using pharmacies as an access point for vaccinations
    3. Transforming our Care Systems
        Person centered and inclusive throughout the care pathway. Better supporting healthcare providers (HCPs) to support vaccine uptake
    4. Combating ageism
        To shift societal narratives and increase vaccine confidence.

- **A life course approach to vaccination**: Recognizes vaccination as a tool for lifelong disease prevention. Requires age-appropriate immunization schedules and delivery strategies based on lifestyle, risks, and life stage.

Clarify definition of older adults in the context of vaccination by considering factors such as **chronological age**

- **WHO Global Vaccine Policy Landscape by Chronological Age (2021):** National vaccination policies for older adults remain limited, particularly in LMICs due to resource and capacity challenges. Even within Europe, a leading region, one-third of countries lack universal vaccine recommendations for older adults.
- Within Europe, adult vaccination policies vary widely by population group and disease type, with high-income countries generally outperforming low-income countries in their implementation of adult vaccination policies.
- To integrate vaccines successfully for older adults, **three core factors** must be considered:
    1. The disease
    2. The vaccine
    3. The immunization program.

    Most challenges lie in the programmatic domain of the immunization program, not the disease or vaccine.
- Key programmatic challenges in expanding adult vaccination policies include limited data, high costs, weak infrastructure, poor stakeholder coordination, difficulty identifying at-risk adults, insufficient healthcare worker training, and low vaccine confidence → **European technical guidance on programmatic considerations are needed**

Clarify definition of older adults in the context of vaccination by considering factors such as **chronological age**

Key programmatic priorities for life-course immunization:

- Expand National Immunization Technical Advisory Group (NITAGs) and **enhance collaboration** across all levels of health systems
- Strengthen adult **disease surveillance** to guide policy and measure vaccine impact
- **Broaden governance** with cross-sectoral coordination and civil society involvement
- **Improve vaccine access** and affordability for adults and the elderly
- **Integrate vaccination** into various care settings, including antenatal and elderly care
- Invest in **interoperable electronic immunization registries**
- Adapt **safety monitoring systems for adult vaccines** to maintain public trust
- Use **tailored, behaviour-informed communication** to boost vaccine uptake
- Partner with community leaders and specialist networks to **build demand and engage healthcare workers**

- WHO member states must view immunization as part of a life course approach and more in-country political support tailored toward adult vaccination programs is needed.
- Terminology of “ageing”. Shifting the narrative around ageing from a negative concept to a focus on "healthy longevity“ and recognizing ageing as a lifelong process starting at birth

Clarify definition of older adults in the context of vaccination by considering factors such as **biological markers like immunosenescence and frailty**

- Major characteristic of population aging is increased heterogeneity in age-related immune decline (**immunosenescence**).
- Aging and age related diseases share mechanistic pillars that converge on inflammaging (state of low-grade chronic inflammation).
- Individual effects of inflammaging vary:
    - Sometimes harmful (chronic inflammatory diseases and increased frailty in older adults)
    - Sometimes adaptive (protective effect against infectious agents)
- **Immunobiography**: type, dose, intensity, and temporal sequence of antigenic stimuli that an individual is exposed to over their life course. Each individual's unique immunobiography shapes their ability to respond to infections and/or vaccines, resulting in varying immune responses.

As a major characteristic of aging is increased heterogeneity and individual variability in immune profiles, there is an urgent need to go beyond chronological age when thinking about vaccination in older adults.

Clarify definition of older adults in the context of vaccination by considering factors such as **biological markers like immunosenescence and frailty**

- Biological age which includes factors like frailty, comorbidities, immune history (immunobiography), and inflammatory profile (inflammaging) could be more informative when thinking about defining older adults for vaccinations.

- Quantfying biological age: "*Biological clock" examples*

    1. Horvath's epigenetic clock, based on DNA methylation, estimates biological age and reveals semi-super centenarians are 8.7 years biologically younger than their actual age.

    2. N-glycan clock uses changes in the structure of N-glycans as a biomarker to estimate biological age.

    3. A targeted epigenetic clock using six genes confirmed centenarians have a lower biological age than expected, indicating slower biological ageing.

Longitudinal and epidemiological studies needed to understand more about biological markers like immunosenescence and frailty and the effects of biological age on vaccination in older ages.

Meeting objectives

Objective 2: Review and discuss vaccines and vaccination programs targeting older adults across Europe.

Review and discuss vaccines and vaccination programs targeting older adults across Europe

Overview on current vaccines, recommendations and national vaccination plans in the older adults in Europe

- **Influenza**: Widely recommended but inconsistently funded for the general older population; Most countries start from 65+ year but 55–64-year-olds are also being highly impacted by the burden of influenza across Europe.
- **COVID-19**: Annual boosters recommended in most countries for aged 65+. Data still shows high burden of disease on 55–64 age group.
- **Pneumococcal Disease**: Most European countries have funding for ‘at-risk” groups but these groups are inconsistently defined. Funding gaps also highlight the disconnect between macro-level goals and individual access; and funding discrepancies are a fundamental equity issue.
- **Herpes Zoster:** Poorly prioritized. Most EU countries have no national recommendation; despite major impact this disease has on function and long-term morbidity.
- **RSV**: Still new vaccine, national recommendations for older adults being drafted or recently developed in several EU countries. Situation expected to evolve.
- **Tdap**: Booster recommended every ten years in most EU-countries but this is rarely emphasized in adult schedules, despite being a missed opportunity for promoting life course immunization.

Review and discuss vaccines and vaccination programs targeting older adults across Europe

Overview on current vaccines, recommendations and national vaccination plans in the older adults in Europe

Promising examples of vaccine strategy in Europe:

- **Policy Leadership & Early Adoption**: Germany demonstrated strong national immunization (STIKO) leadership with early RSV vaccine adoption, showing the importance of governance in guiding adult immunization policy, but recommendations alone are insufficient without actual uptake.
- **Primary Care Embedding**: Sweden integrating adult vaccination into primary healthcare services, showcasing best practice in operationalizing life course vaccination within everyday care.
- **Equitable Access**: Poland removes financial barriers by providing free flu, COVID-19, RSV, partially Herpes Zoster (at-risk based) and partially pneumococcal (at-risk based), illustrating how funding policies can drive inclusion. However implementation/coverage still needs to improve

Review and discuss vaccines and vaccination programs targeting older adults across Europe

Overview on current vaccines, recommendations and national vaccination plans in the older adults in Europe

Vaccine standardising in the country and Europe:

- Standardising and simplifiying vaccine schedules, definitions (e.g., “at risk”), and policies can improve access, uptake, and system efficiency.
- No EU country fully harmonises schedules for all 5 major respiratory vaccines; only 41% of countries have partial coadministration policies (mostly influenza and COVID).
- Ensuring equitable vaccine access in older adults requires not just system integration but also standardised language, terms like “at risk” vary by country, leading to confusion and inconsistent eligibility.
- Operational Challenges as health decisions are mainly managed by individual member states. Shifting the EU’s approach to include health decisions could help.
    - Harmonisation vs. Standardisation: More feasible solution may be “standardisation”, ensuring certain vaccines are offered at specific ages across countries
    - Promote the wider benefits of vaccination in terms of the investment in public health, considering the broader economic benefits

Review and discuss vaccines and vaccination programs targeting older adults across Europe

Perspectives from three different EU countries on their country's respective vaccination recommendations and strategic plans for older adults

1. Portugal:

Current Vaccines: 4 out of 6 vaccines recommended for older adults in the National Immunization Program: COVID, Influenza, Tdap are free, Pneumo is risk-based. RSV and Herpes Zoster are not currently recommended in older adults.

Access: Most vaccines for older adults can be administered in pharmacies and primary care settings without prescriptions, aiding uptake.

Challenges: Increasing vaccine coverage among healthcare professionals, improving communication, and building trust.

Short-term Plans:

- Add new vaccines (RSV, HZ, PCV21) to the program.
- Aim for 95% vaccination coverage by 2030 for individuals 60+, those with chronic conditions and healthcare providers.
- Also saw decreasing coverage in Influenza in the last year

Review and discuss vaccines and vaccination programs targeting older adults across Europe

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2. Poland:

Current Vaccines: fully covered: influenza (standard dose); COVID and RSV (all 65+).
Pneumo and Herpes Zoster are risk-based, for older adults. Tdap not covered

Access: Pharmacists have been authorised to administer 26 adult vaccines since 2021, simplifying access

Challenges: Complex decision-making process regarding which vaccines are funded (e.g., high-dose flu vaccines not free).

Vaccination is a priority for Poland's presidency, linked to European security. The Polish Academy of Science advocates for improving accessibility and understanding within the Ministry of Health

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3. Denmark:

- **Current Vaccines**: 5 out of 6 vaccines recommended for older adults (Herpes Zoster in immunosuppressed only) in the National Immunization Program.
- All six vaccines are fully funded, with digital reminders used for vaccination.

Meeting objectives

Objective 3: Address the unique challenges and opportunities in conducting vaccination studies, and especially clinical trials, with older adults.

Address the unique challenges and opportunities in conducting vaccination studies, and especially clinical trials, with older adults

From clinical trials to real-world data: challenges and opportunities in the conduction of trials

- Effective vaccination strategies for older adults require data on vaccine effectiveness, but challenges in vaccine trials for frail and older adults.
  - Identifying frail participants in large populations;
  - Recruiting participants and obtaining informed consent;
  - Ensuring unbiased follow-up;
  - Determining and capturing relevant outcomes
- Pragmatic trials aim to improve decision-making by using diverse participants through existing data sources, reducing costs and participant burden.

  Three examples from Denmark:
  - **DANFLU-1 study**, assessed the feasibility of conducting a large-scale, randomized controlled trial (RCT) with 12,500 participants. This trial compared high-dose quadrivalent influenza vaccines (QIV-HD) to standard-dose (QIV-SD) vaccines in citizens aged 65-79. Concluded that Denmark's integrated health data systems are highly effective for large-scale trials.
  - **DANFLU-2** study aims to determine if high-dose flu vaccines reduce hospital admissions for flu, pneumonia, and cardiovascular diseases compared to standard-dose vaccines. It will invite up to 1 million Danes and assess frailty using health registries to evaluate its effect on recruitment and vaccine effectiveness.
  - The **NUDGE-FLU** trial aimed to use this study design to increase flu vaccine uptake via randomization to different behaviorally informed letters, with the most effective found to be that emphasizing the cardiovascular benefits related to flu vaccination.

Address the unique challenges and opportunities in conducting vaccination studies, and especially clinical trials, with older adults

From clinical trials to real-world data: challenges and opportunities in the conduction of trials

- Real-world data can complement RCTs by filling gaps in older adult vaccination research, especially when clinical trial data is limited.
- However, bias (healthy vaccine effect) can overestimate effectiveness, while confounding by indication (sicker individuals more likely vaccinated) can underestimate it.
- Treatment effects known to vary between RCTs and observational studies:
  - Network meta-analysis of randomized vs observational studies on effectiveness of high dose flu vaccines for elderly

    → Pooled effect sizes higher for RCTs than observational studies. 25% vs 10.2%
- Observational studies can play a role in vaccine policy decisions. ACIP had no influenza vaccine preference for older adults until 13-million-person FDA observational study showed consistent benefits of enhanced vaccine vs standard dose influenza vaccines, prompting specific recommendations in 2022/23.
- Debate on whether developing pragmatic RCT infrastructure across the EU would be more effective than relying on observational data, given bias and uncertainty in vaccine effectiveness.
  - A potential solution is improving observational methods to combine only high-quality observational data with RCTs.

Meeting objectives

Objective 4: Explore the mechanisms and factors affecting the efficacy, effectiveness, safety and durability (including boosters) of vaccine responses in older adults and discuss strategies (like adjuvants and higher doses) to enhance immune responses. Discuss specific characteristics of different vaccines for older adults

Explore the mechanisms and factors affecting the efficacy, effectiveness, safety and durability (including boosters) of vaccine responses in older adults and discuss strategies (like adjuvants and higher doses) to enhance immune responses

Immunological mechanisms of vaccine-induced immune response in the older adults

Ageing weakens the immune response to vaccines due to functional defects in innate and adaptive immune cells

→ weaker and faster-declining antibody responses in older adults, reducing long-term vaccine effectiveness.

Strategies to improve vaccines for older adults:

- **Increasing antigen dose**: Enhances immune response but may lead to higher reactogenicity and production challenges.
- **Adding an adjuvant:** Boost antibody levels, T-cell responses, broaden the antibody repertoire, and allow dose sparing, but optimal adjuvant-antigen combinations are still needed.
- **Other strategies:** to enhance protection include rejuvenating the immune system and reducing inflammation prior to vaccination, exploring alternative administration routes, developing broader vaccines, optimising boosters, and increasing vaccine uptake.

Explore the mechanisms and factors affecting the efficacy, effectiveness, safety and durability (including boosters) of vaccine responses in older adults and discuss strategies (like adjuvants and higher doses) to enhance immune responses

Comorbidities and vaccination response in older adults

Immune heterogeneity is key to predicting vaccine responses, and immune status may be more important than specific diagnoses.

Both can “immunotypes” and “immune entropy” may help identify older adults at risk of poor vaccine immunogenicity.

- **Immunotypes**: In the Dutch VITAL cohort study nine immunotypes were identified reflecting immune aging patterns, which were better predictors of immune changes than chronological age alone.
- **Immune entropy**: captures the complexity of the immune network and reflects the total perturbations in the immune network in a single variable. Higher immune entropy indicates greater immune system disruption, which is associated with factors like age, sex, and CMV-seropositivity. Immune entropy can't be quickly changed but lifelong interventions can help lower it, improving vaccine responses.

Discuss specific characteristics of different vaccines for older adults

1. Herpes Zoster: Duration in Older Adults

- Herpes zoster reactivates with age and can be associated with decreased immunity, leading to complications like postherpetic neuralgia.
- Shingrix vaccine provides strong, lasting protection in older adults, with efficacy >70% after at least 11 years.
- Protection in adults over 70 is similar to that of younger adults.
- Adding the AS01 adjuvant extends immunity duration.

2. Pneumococcus: Future Vaccines

- Pneumococcal vaccines - Five licensed vaccines: PCV13, PCV15 PCV20, PCV21, and PPV23.
- PCV13 provides long-lasting immunity (at least 4 years) in older adults; immunity duration for PCV20 and PCV21 largely unknown
- Newer vaccines (PCV20, PCV21) aim to expand coverage and improve protection, especially for older adults and those with comorbidities.
- PCV 21 developed as a population-level vaccine to prevent invasive disease and pneumonia in adults, as part of a complimentary approach to paediatric PCV immunization programs. Covers 79.3% of invasive pneumococcal disease in adults 65+ in Europe.
- PCV 21 has a safety profile similar to PCV 20 and has shown strong immunogenicity for all 21 serotypes. It met non-inferiority criteria for all serotypes and surpassed superiority criteria for 10 out of the 11 unique serotypes. approved by the European Medicines Agency (EMA) on March 24, 2025.
- More serotypes in new vaccines → but potential losses to immunogenicity against certain serotypes – further monitoring is needed

Discuss specific characteristics of different vaccines for older adults

3. Tdap: boosters in older adults and differences between countries

- Focus on pertussis as largest burden in elderly: A large increase in pertussis cases occurred in Germany and across Europe in 2024, though the causes are unclear. Pertussis in older adults (65+) results in 4-6 times higher morbidity than in those aged 45-64 years.
- Despite this, pertussis has not been a primary focus in managing health among older adults.
- Four pertussis vaccines are available, but data on their effectiveness in older adults is limited.
- Across the EU, recommendations for pertussis vaccination in individuals over 60 vary substantially by country (8 of 31 countries recommend Tdap vaccination in adults aged 60+). Similarly, there are selective guidelines across national and international agencies in who should receive pertussis vaccination.

Discuss specific characteristics of different vaccines for older adults

4. RSV: Need for revaccination? When and how to organize it?

- Three RSV vaccines available in EU: Arexvy® (GSK), Abrysvo® (Pfizer), and mRESVIA (Moderna).
- U.S. data shows effectiveness of Abrysvo® and Arexvy® in preventing RSV-related hospitalization and death, including in those aged 75+, immunocompromised, and with chronic conditions.
- All three vaccines induce long-term immunity (at least 24-36 months) after first dose
  - GSK (Arexvy®): Neutralizing antibodies (NAb) peaked at 31 days and remained above baseline for 36 months.
  - Pfizer (Abrysvo®): NAbs remained higher than baseline 24 months after one dose.
  - Moderna (mRESVIA): NAbs remained above baseline for 8-20 months.
- Revaccination shown to increase NAbs but still inferior to titres produced relative to first dose.
- Revaccination is needed, but not annually, and the timing and schedule for all RSV vaccines remain uncertain.
  - Co-administration with other vaccines (flu, COVID, PCV20, Herpes Zoster) should be considered.
  - An electronic vaccine registry and decision aid tools for healthcare workers are needed to reduce memory bias,
  - Ideally, all RSV vaccines should have a unified revaccination schedule to simplify administration

Discuss specific characteristics of different vaccines for older adults

5. Influenza: High-dose and adjuvanted vaccines

Ways of improving influenza vaccine effectiveness:

- **Differentiated vaccines:** Adjuvanted and higher antigen dose vaccines to boost immune response.
- New platforms
- Alternate routes of delivery
- Broader protection (aspirational e.g., universal vaccine)

RCT study of high-dose vs standard dose in ~30,000 individuals found relative efficacy was ~24% higher for high-dose vaccine. Variation was observed by influenza subtype.

Retrospective cohort study of high-dose vs standard dose against hospitalizations in ~2million found relative effectiveness was ~24% higher for the high-dose vaccine.

Test-negative case control study of ~512 individuals found adjuvanted influenza vaccine ~59% more effective than standard dose.

Systematic review and meta-analysis results: Standard dose influenza vaccine vs no vaccine has the clearest impact.

Getting vaccinated is most important

Discuss specific characteristics of different vaccines for older adults

6. COVID-19/SARS-CoV-2: Different platforms (e.g. mRNA)

- Older adults experience higher COVID-19 mortality and morbidity, especially in ICU settings (e.g., France).
- **Waning Immunity:** COVID-19 vaccine-induced humoral response declines over time, more notably in older adults.
- **mRNA Vaccination**:
  - Israeli study of ~4.7 million adults: mRNA vaccines reduced infections and deaths in older aged people.
  - Latest US Omicron vaccine effectiveness estimates: 30–36% for infection; 40–45% for hospitalization among elderly and immunocompromised
- **Globally, 15.5 million deaths averted in the first vaccine year of the pandmeic, with greatest benefit in older populations.**
- **First booster prevented 51% of deaths.**

Policy & Coverage:

- WHO recommend vaccinating elderly, but why low coverage in most European countries Europe (France ~20% in 2024/25 for 65+).
- Communicating vaccine benefits (especially COVID-19) remains a challenge.

Meeting objectives

Objective 5: Discuss implementation of vaccination in older adults at the policymakers, organizational and population levels. Identify strategies, including best practices and successes, to increase vaccination coverage in both community and other care settings, and address communication and logistical challenges to ensure program sustainability and equity

Discuss implementation of vaccination in older adults at the **policymaker's level**

Vaccine impact assessment and economic value of vaccination in aging adults

What evidence demonstrates the economic and societal benefits of immunization programs?

Economic and Societal Benefits

1. Broader Benefits (Often Overlooked):

- **AMR Prevention:** Vaccines can reduce antimicrobial resistance (up to 10% of 5 million AMR-related deaths potentially preventable).
- **Quality of Life:** For both individuals and carers.
- **Social Equity & Transmission:** Reduced disease circulation benefits whole communities (herd immunity).
- **Enabler for Other Treatments:** Vaccines can allow continuation of treatments like chemotherapy

2. Narrower Benefits:

- **Direct Health Gains:** Reduced mortality and improved QOL for vaccinated individuals.
- **Healthcare System Relief:** Fewer hospitalizations and treatments reduce system burden and free up resources.

3. Societal Economic Impacts:

- **Productivity Gains:** Less absenteeism among vaccinated and caregivers (respiratory infections alone cost UK £44B annually).
- **Macroeconomic Value:** Broader economic stability and resilience.

Discuss implementation of vaccination in older adults at the **policymaker's level**

Vaccine impact assessment and economic value of vaccination in aging adults

What evidence demonstrates the economic and societal benefits of immunization programs?

Approaches to Economic Evaluation:

1. Outcome-Focused (Health Economics):

    Cost-Effectiveness Analysis (CEA): Maximises health gains within existing budgets.

2. Finance-Focused (Fiscal Modelling):

    Fiscal Health Modelling: Assesses government return on each Euro invested.

    Benefit-Cost Analysis (BCA): Compares costs in health to other sectors.

Discuss implementation of vaccination in older adults at the **policymaker's level**

Vaccine impact assessment and economic value of vaccination in aging adults

What evidence demonstrates the economic and societal benefits of immunization programs?

Vaccination consistently ranks as one of the most cost-effective health interventions. Only 0.08% of GDP and <1% of healthcare budgets are spent on immunization on average.

Policy Challenges:

- **Short-Term Focus:** Policymakers often prioritize short-term gains over long-term preventive value.
- **Narrow Approaches:** Current Assessment methods miss broader social and economic benefits.

What Policymakers Need:

1. **Evidence:** Comprehensive and holistic data on vaccine impact.
2. **Willingness:** To act on the broader value, not just narrow outcomes.
3. **Ability:** Tools and frameworks to make informed, long-term decisions.

Discuss implementation of vaccination in older adults at the **organizational level**

The organizational level: what are the challenges in reaching older adults and opportunities

Depends on **structure, processes and systems**

Organizational Barriers to Vaccinating Older Adults:

- **Awareness:** Low health literacy, mistrust, personal beliefs, and misinformation.
- **Socioeconomic:** Income, education, caregiver support, and social/geographic isolation.
- **Logistical:** Infrastructure gaps, supply chain issues, and inconsistent vaccination records.
- **Accessibility:** Physical barriers, limited healthcare resources, and complex system navigation.

Challenges in Implementing Vaccination Programs for Older Adults: Political, social, and governance gaps; provider and infrastructure challenges; communication and public health issues; financial and incentive limitations; and inconsistent global vaccine guidelines.

Solutions to Improve Vaccine Uptake in Older Adults:

1. Approach vaccination of older adults as a continuous, comprehensive process, tailored to local contexts and specific needs.
2. Target and reach out the older adult population
3. Promote vaccine acceptability among older adults
4. Improve accessibility to vaccination services
5. Engage stakeholders and the community

Discuss implementation of vaccination in older adults at the **population level**

- We must understand the audience when communicating to older adults. Communication can be challenging as often complicated by age-associated issues. Older adults have highly heterogenous reasons for getting vaccinated.
- Healthcare providers (not just doctors) remain **the most trusted source** for older adults receiving vaccination.

Key Messages to Emphasise:

- Vaccines prevent severe illness, hospitalization and death
- Protection fades – boosters maintain defense
- Vaccination supports independence and quality of life
- Today's vaccines are safe, effective and well studies

Be prepared to address common barriers (e.g., "I've already had the vaccine", I never had influenza before")

Make sure relevant influencers (family and caregivers, and community orgs, senior centres and religious groups), receive information on vaccination to empower others

Be prepared to tailor messages to the person sitting in front of you and listen and understand.

Motivational framing: Be prepared to understand the patient's motivation or concern and based on that change your messaging. Example: 65+ Website to help healthcare providers communicate on influenza vaccination: https://www.influenza-defense.org/

Personalized Year-Round Vaccination Action Plan: Calendarize vaccines across the entire year all the vaccines that are recommended by ACIP in the US for patients, to improve communication to patients and understanding for providers → to improve vaccine uptake.

Immunize.org **materials could be used to empower HCP**

Summary: Take Home Messages

- Vaccination of older adults should be obvious. But shifts required at policy, organizational and population level to understand how important vaccines are for older adults. Evident to reimburse treatment but not to reimburse prevention, vaccination as investment.

- A life course approach to vaccination and WHO's concept of "healthy ageing / aging is living" is important, but this depends on the implementation of specific policies and agendas within member states and where necessary moving away from the idea of a disease-based model.

- While much informative European data has been presented throughout this meeting (e.g. observed heterogeneity in vaccine recommendations and coverage across Europe and within countries) there's also need to look behind the numbers as that's where policies can be influenced and shaped to improve vaccination among older adults in Europe.

- Broader Impact of Vaccination in Older Adults: Vaccination not only prevents specific diseases but also reduces hospitalizations, deaths, worsening of comorbidities, and related conditions (e.g., CVD, stroke), while preserving physical and mental function, independency, alongside often-overlooked economic and societal benefits.

Summary: Take Home Messages

- Education and Communication techniques are critical: for empowering healthcare providers in Europe, it would be highly beneficial if these techniques were included in the training curriculum
- Common Theme of "**Heterogeneity**"
    - Heterogeneity in data e.g., national vaccine recommendations across Europe for six vaccines assessed
    - Heterogeneity in how we quantify age (chronological vs biological) and immune responses of older adults ("biological ageing")
    - Heterogeneity in generation of evidence on vaccination effectiveness (RWE vs RCTs or "pragmatic RCTs")
    - Heterogeneity in reported benefits of vaccination: individual disease prevention, downstream prevention, societal-level savings.
    - Heterogeneity in communication strategies: What works to positively influence one older adult to receive vaccination may not work for another.
- Standardisation both within countries and within the EU (e.g. in vaccine schedules) is one potential solution to address certain levels of heterogeneity, and improve vaccine uptake among older adults
- We have a public health, economic and ethical imperative to vaccinate older adults in Europe.