Adult Immunization Board Country Meeting Finland Summary

4 and 5 December 2024

Helsinki, Finland

Objectives of the meeting

- Review the structure of the **healthcare system in Finland**, focusing on **how adult vaccination programs** are integrated into the national vaccination plan. Analyze current **policies and strategies** for adult vaccination.
- Explore the integration of **national healthcare registers** in monitoring and evaluating vaccine coverage and effectiveness. Analyze the **organization, distribution, and regulatory systems** for adult vaccination at the national and regional level.
- Discuss the effectiveness of current **surveillance systems** in detecting and responding to vaccine-preventable diseases in adults.
- Understand the role **of modeling and economic evaluations** in shaping **vaccine policy**. Discuss how modelling studies can inform policy decisions and prioritization of vaccines.
- Address the factors influencing **vaccine acceptance and strategies to increase demand** among adults. Assess public attitudes and beliefs toward adult vaccination.
- Focus on existing vaccination strategies for **specific population groups** and the effectiveness of such programs. Discuss future directions for adult vaccination.

Why is Finland's experience important?

- Public national health care system coverage is complemented by employer-funded occupational healthcare and voluntary private health insurance.
- Finland pays less per capita on healthcare than comparable European countries for high quality of care. For example, more nurses than doctors in Finland compared to other EU countries, due to Ministry of Social Affairs and Health initiative to increase supply of healthcare workers. High level of satisfaction in population (OECD studies)
- Centralized system of vaccination planning; national register of overall health registry data, although with limitations (no travel vaccines captured; adult vaccines limited, private health service providers do not usually provide data). Data registers transforming since 2019 into "data warehouses" and data exchange among counties is facilitated for more flexible use to assess impact of vaccinations. Potentially data exchange among different EU countries as well, limited by data protection concerns.
- Finnish population trusts vaccines and there is high vaccine coverage. Whole family (including fathers) involved in well baby clinics since 2000s. Nurses run the system.
- Finnish researchers are active in vaccine research

Finnish situation illustrates differences between infant/child and adult immunization

- Only 45’000 births each year small cohort compared to cohort of 1.3 million elderly people
- Infants/children may need multiple doses; adults usually only one or booster
- Infant/children immunization infrastructure well established, through well-baby clinics and school based system; no comparable infrastructure for adult immunization
- Children must be vaccinated EARLY – highest risk; high risk time for adults can vary, so what is the best timing for various vaccinations? Also, older adults suffer from waning immunity
- Infants/children are generally healthy with no comorbidities, while (older) adults more likely to have comorbidities
- Life expectancy for infants/children longer than for adults
- Relatively easy to measure direct and indirect benefits of infant immunization; more difficult to accurately measure indirect benefits of adult immunization
- Pharmacists in Finland now allowed to give vaccinations; requires training but experience from other countries shows that this expansion could potentially expand vaccine coverage

Healthcare system in Finland

- Finland's overall healthcare system has had a major reorganization of administration of healthcare services via 21 counties plus City of Helsinki instead of 309 municipalities since 2023. Steering of well being counties is coordinated by the Ministry of Finance.
- There is a strong legal basis for vaccine strategy in Finland, including Acts and Decrees.
  - Communicable Diseases Act (2016) provides basis for overall strategy in Finland, including vaccinations. Comprehensive revision is ongoing, also to implement EU and International Obligations (e.g. HTA).
- Decision-making process is prolonged, including role of expert assessments and economic analysis. Can take years, including budget negotiations with Ministry of Finance, due to multi-year commitments to institute vaccinations.

Current Adult Vaccination in Finland

- Currently in NVP:
  - *General recommendation:* adults are recommended to have :
    - Regular booster doses of Td(ap): tetanus, diptheria (and pertussis (at 25 years))
    - Influenza from 65+
  - *General recommendation:* be up to date with childhood vaccines:
    - MMR (2 doses)
  - *Recommended for specific groups*
    - Pneumococcal disease, polio, hepatitis, Hib, meningococcen, Influenza, tick-borne encephalitis

- Temporary (not part of NVP yet):
  - Tdap vaccination for preg women, COVID-19, Mpox

Introducing New Vaccines

- 4 requirements for introducing new vaccine:
  - Estimate of public health benefit (not just individual) benefit
  - Safety of vaccine individually
  - Safety effects on population level
  - Cost effectiveness
- Considerations regarding new vaccines:
  - If vaccine not cost effective for general population, then could be targets to specific risk groups.
  - Centralized state procurement is more economical

New vaccines and potential next adult vaccines for investigation into the Finland program

- Enhanced influenza vaccine = MF59 (adjuvanted) vaccine now in use for 85y and immunocompromised in 2024-2025
- Severely immunocomporomised and all 85+
- Herpes Zoster HTA finalized in spring 2025
- RSV immunisation
  - Nirsevimab in use for season 2024-2025 for infants
  - No recommendation for vaccines yet
- Covid vaccines after 2026 after EU procurement
- Expanding uptake of pneumococcal and influenza vaccinations
- HPV -> catch up programs including >18 years?

Lessons from Implementation of Finnish Vaccine Programme

- The implementation of the national program should be as simple, inexpensive, effective and equal as possible. Vaccination budgets were very high during COVID years; now back down to “normal” levels. Centrally administered vaccinations on the public side are the most cost-effective. Important to monitor cost of distribution of vaccines and waste
- New vaccines are considerably more expensive than existing ones. Full vaccine program per child is €253, but even one new vaccine for adults could cost that much
- Implementation of the national vaccination program is the responsibility of the wellbeing services at county level (previously at municipality level)
  - Only c. 5 % of 65+ get their influenza vaccination from the private sector
- Adding vaccination sites, especially small ones, has direct effect on distribution costs and wastage of vaccines. Need for more experts: there are not large number of people to do the investigations to include vaccines in the program
- Improvements in data collection for registries came during COVID crisis: “Don’t let go of a good crisis” – this is the best time for innovations. More digitalization and sharing of vaccination data. But need to move to a consistent software for linking databases of vaccinations.
- Collaboration among Nordic countries increasing: vaccine acceptance group, regular meetings. Also collaboration among registry people. EU Joint action on vaccine preventable cancer coming up.

Potential Improvements in Adult Vaccinations in Finland

- Remembering to get vaccinated as an adult is individual's responsibility
  - Reminders sent to target groups by SMS or via client portal only on influenza and COVID19–vaccinations
  - Built-in reminders in electronic patient records are still rare
- Information about previous vaccinations may be scattered
- Hospitals/ specialist doctors have little information about patients' vaccination status
- (Most) self-paid vaccines for adults are expensive = inequality
- Consultants (like foreign workers in shipyards) are often not covered by occupational health programs or responsibilities are unclear
- Need to revise existing adult vaccine programs in light of major outbreaks or changing serotypes (for example, pertussis among pregnant women (coverage 33%), pneumococcen) , as in other countries.

Adult Immunization Board

National healthcare registries in Finland

- There is a metamorphosis under way: from “registry” to “data warehouse”.
- More flexibility in the access to data and more collaboration among data warehouses is making deeper analysis of data possible. Cross-border exchanges of information among Nordic states are important.

Uses of Registries to Evaluate Vaccine Effectiveness

- Studies presented during this conference showed how using and combining data from various data warehouses created effective evaluations of the effectiveness of vaccines and efficient use of those data:
  - Seasonal influenza vaccine for Finns between 65-100 years old: limited (50%) effectiveness
  - COVID vaccines: vaccinating people 75 years old or older brings more health benefits than vaccinating people under 75 years of age.
  - Indirect impact of infant PCV vaccines on adult infections: significant, substantial, but limited over the years
- The use of “Negative Control Outcomes” and Parallel Cohort Comparison is cited as important tools to strengthen analysis of registry data. “Operationalizing” outcomes via algorithms can derive robust outcomes.
- However, registry studies are not sufficient alone to justify policy decisions. Active intervention studies are still needed; can be constructed like RCTs.

Strengths and limitations of register-based studies

Pros	Cons
Population-based studies are more precise	Registry data cannot prove causality; especially important for safety studies
Saves time, money and staff compared to prospective studies	Bias e. g. due to unmeasured differences health-seeking behavior
In Finland, registries are “real time”, allowing for analysis with up to date data.	Negative test results
Finland’s comprehensive registries can identify non-obvious outcomes, like narcolepsy after swine flu vaccinations	History of infections
	Increased use of self-test or on-site tests means that this data is not captured for registries

Adult Immunization Board

Future of Registry / Data Warehouse Studies for Adult Immunization

- Greater Nordic collaboration, which creates a larger pool of data for analysis. Particularly important in looking for rare incidents (such as adverse reactions to COVID vaccines)
- Increased inter-disciplinary collaboration and use of data sources beyond typical registries (for example, Kanta Prescription Centre)
- Focused Risk Group analysis instead of general population = less expensive (cf German experience with influenza vaccines for people 75 and older), though general population studies can be more impactful for policymakers.
- Further refinement of inpatient and other hospital case definitions
- Inclusion of data from different types of healthcare contacts, including private healthcare and primary care
- Not all risk groups of interest are currently definable in the registers (for example, pregnancy and number of weeks pregnant)

Adult Immunization Board

What is Immune Surveillance?

- Immune surveillance involves monitoring and assessing population immunity against pathogens, whether induced by vaccines or infections, or hybrid.
- Immune surveillance allows for estimating the level of population protection against vaccine-preventable diseases.
- By assessing the level of immunity in a population, and by identifying possible gaps, immune surveillance can inform decisions on booster doses, vaccine updates, and prioritization of at-risk groups.
- Immune surveillance is a strength of the Finnish system - not a lot of EU countries are doing this in structured way

Adult Immunization Board

Key insights from COVID-19 serological studies

- Reduced immune responsiveness can lead to lower immunogenicity and vaccine efficacy in elderly or immunocompromised subjects. Adjuvanted or high-dose vaccines, or more frequent booster doses needed for older adults to boost immune responses.
- Immunity derived from prior infections can combine with vaccine-induced immunity to provide robust protection. This concept is not unique to COVID-19 and has been observed with other diseases like influenza.
- Hybrid immunity may reduce the frequency of booster doses in adults for diseases where natural infection contributes to lifelong or long-term immunity–lack of natural boosting may increase the need for booster vaccinations.

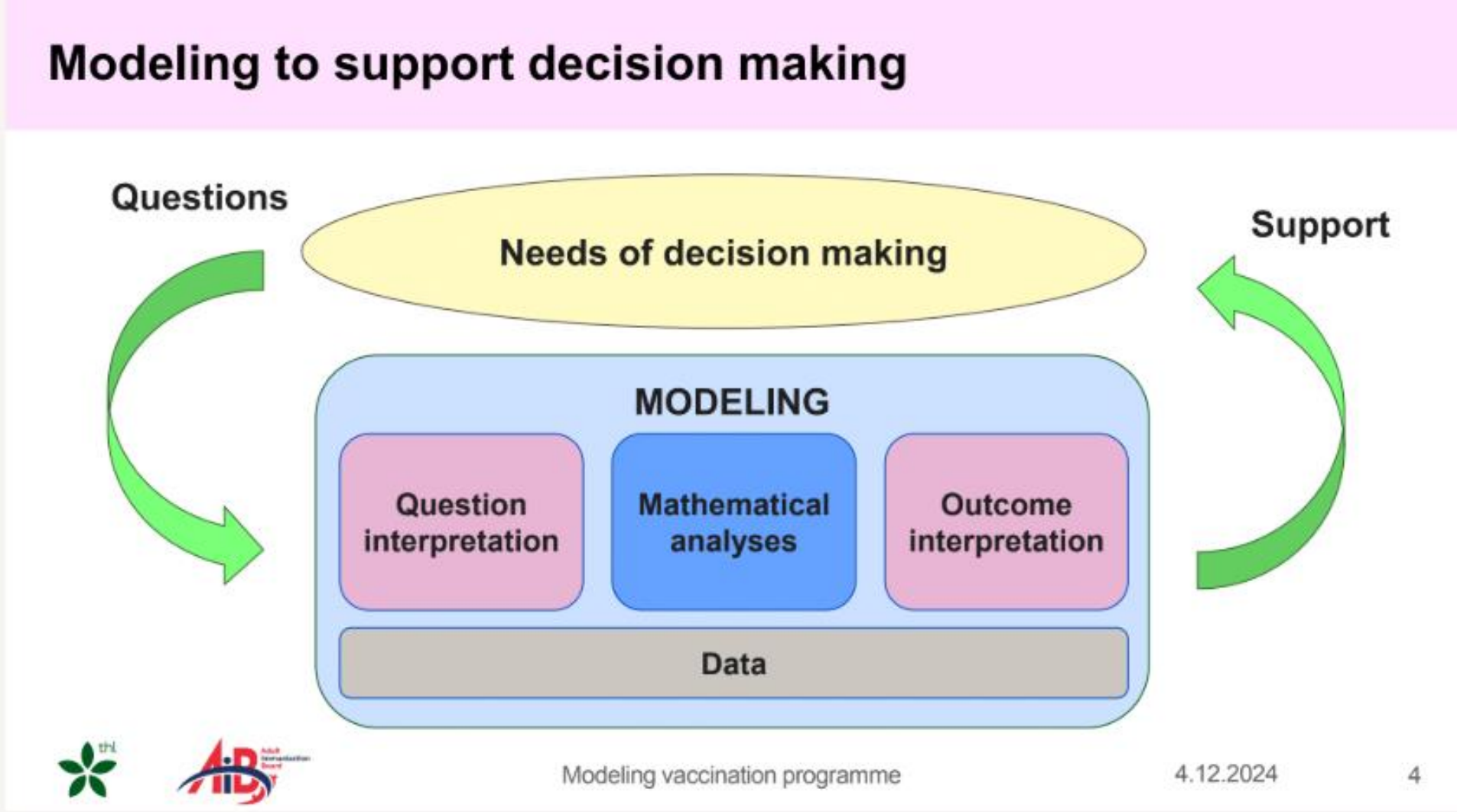
Adult Immunization Board

Future Serosurveillance Options

- Serosurveillance can be used to evaluate the prevalence of infections in the population for vaccines to be considered for the adult immunisation program (e.g., RSV) and to justify inclusions of new vaccines into national vaccination programme.
- Disease burden in the adult population can also be assessed for vaccines already included in immunization programs, particularly for evaluating the need for booster doses (e.g., pertussis).
- Immunological studies can assess both antibody-and cell-mediated immunity, providing insights into the duration of immunity and enabling predictions of vaccine-induced protection in target populations.
- Extensive serological studies during the COVID-19 pandemic were enabled by additional funding and academic grants. The future of serosurveillance will depend on the availability of resources.

Adult Immunization Board

Use of Models for Adult Immunization



Typical Situations to Use Modeling

- New vaccine and/or new target groups
- Models can be used to construct the control population for a comparative study
  - A model showed how indirect vaccine effectiveness had a major role in the Finnish COVID situation through “herd immunity”
- Complicated structure, different interactions
- Different options/scenarios and uncertainties
- Realized total/overall vaccine effectiveness
  - Example: COVID-19, era of Delta variant
- Vaccine procurements

Adult Immunization Board

Modeling, Economic Evaluation and Procurement

- Cost-effectiveness studies can be used for analysis and as a basis for procurement.
- Finland uses a tender-based procurement system for procuring vaccines, which are tax funded, leading to relatively lower prices.
  - Purchase price for vaccines in Finland is 1/5 German prices and 1/7 Swiss figures. Less than 1% of total health expenditures
- Models provide a means for a cost-effectiveness assessment of interventions, including the cost of adverse reactions, sick leaves and reduced productivity
- Quantitative evaluations of the value of a vaccine or other medical intervention can be determined via the use of QALYs (Quality Adjusted Life Years) and ICERs (Incremental CostEffectiveness Ratios).
- Health Economic modelling can give values for improvements in care in terms of Euros for payer and buyer review – "Budget Impact Model"
- However, thresholds for cost effectiveness (Euro/QALY) are not fixed in advance and in many EU countries prices are kept confidential.
- Payers should **first** consider what they consider to be the **value** offered by the new vaccine . Is the additional benefit worth the extra cost? Do not overpay!

Vaccine acceptance and strategies to increase demand

- The effectiveness of vaccine campaigns depends upon people's culture and behaviour, as noted by WHO: "… the importance of behavioural and cultural insights which affect health behaviours… to inform more effective health policies…"
- "CUBE" has been set up in January 2022 to examine these factors. Specific projects relevant to vaccines are:
  - VAX-TRUST
  - HPV vaccination in boys 15-18 yrs old
  - Avian flu vaccination among fur farmers
  - Joint action in cancers caused by infections
- Confidence among Finnish residents is strong, but there has been some reduction recently. Narcolepsy after swine flu vaccination affecting circa 200 young people has reduced confidence among teens and young adults, for example
- COVID vaccinations controversies internationally have had an impact in Finland as well, also due to new vaccines and changing variants.
- Would be advisable to do "acceptance studies" **prior to** launching campaigns in order to improve uptake of vaccines in target populations.
- **Apparent paradox:** declining level of "confidence" measured, yet vaccine coverage remains strong. Are we asking the right questions? Is "confidence" about vaccines or trust in government in general?

Moving from General Population in Finland to Sub Populations

- “H5N1 risk groups” (avian flu and seasonal influenza)
- Healthcare Providers and Personnel
- Military Conscripts
- Migrants and related populations
- Travellers

Specific Population Groups: H5N1 risk groups

- Avian flu outbreak in fur farms has raised awareness of need for vaccinations in target populations
- Target populations for avian flu vaccinations, in order of priority:
  - Workers at fur farms
  - Poultry workers
  - Veterinarians in the public sector
  - Bird ringers
  - Laboratory personnel handling the avian influenzavirus or samples that may contain the virus
  - All groups offered also seasonal influenzavaccination since fall 2023
- Finland only country to start actual vaccinations, but low pickup of avian flu vaccines (only 5% of target populations).
  - Vaccine was not used previously in humans, which could be a factor for lower pickup / potential vaccine hesitancy
  - Also, fur farmers are aware that THL is in favor of prohibiting fur farming, which may lead to vaccine scepticism.
  - There is higher pickup of seasonal flu vaccines among fur farmers who were exposed to infected animals in the year before (increase from 6% to 17%)

Adult Immunization Board

Specific Population Groups: Healthcare Providers

- Employer responsible for protecting employees from biological hazards related to work tasks. This includes covering cost of vaccinations that protect employees from work-related hazards.
- Vaccines for healthcare providers can be distributed via hospital pharmacies separate from normal pharmacy distribution network.
- COVID vaccination requirements were very strict for employees in certain areas, including administration posts. No longer in place.
- However, Decree 48 mandates that vaccine requirements can apply to support staff depending on their exposure to patients and their premises.
  - Required vaccinations: measles, varicella, influenza; pertussis for those working with infants.
  - Exceptions only for special reasons, i.e., no other staff available, urgent need, employee cannot be vaccinated for health reasons
- Vaccinations which are considered to be relevant to “absence from work”, including for sick child care:
  - *Adults*: influenza, COVID-19, Pneumococcus, Shingles
  - *Children*: Influenza, Rotavirus, Varicella
  - *In the future?:* RSV, others?

Adult Immunization Board

Specific Population Groups: Military Conscripts

- Immunizations for military provided via garrisons, like overall healthcare for military members. Living in garrisons provides opportunities for virus contagion.
- *Basic vaccines*
  - Tdap: 2012 Td ->Tdap
  - MenACWY: polysaccaride conjugate 2017
  - MMR (measles,mumps, rubella)
  - Seasonal influenza:since 2013
- *Additional vaccines*
  - TBE (localcircumstances): since 2012 -2017
  - Spleen deficiency (only a few/y)
  - Haemphilus influenzae B (Hib)
  - Pneumococcal vaccine

Adult Immunization Board

Specific Population Groups: Migrants

Definitions: migrants, asylum seeker, refugee, undocumented persons or equivalent populations (Roma people)

Vaccination situations in home countries can be much different than in Finland. Vaccination status of individual migrants can be unclear; Russian or Estonian populations have generally low vaccination rates. Somali children generally have high coverage of MMR (slight drop), Pentavac, and PCV – comparable to overall population.

Determining migrants' vaccination coverage

I. Employment inspections
II. Clinics, schools and student healthcare
III. When receiving quota refugees
IV. When encountering those who have been granted residence

What affects vaccination uptake in migrants?

I. Insufficient access to healthcare
II. Low utilisation rate of healthcare services
III. Financial , linguistic, cultural or logistic barriers (c. 500'000 residents of Finland do not speak Finnish or Swedish as first language); Health beliefs, health literacy
IV. Vaccine hesitancy : Information sources – can differ from sources used by general population

Take-away messages:

- Migrants' right to social and health services depends on the nature of their permit
- In terms of asylum seeking and refugee adults, dT, MMR and polio vaccines are offered
- Country of origin and previous vaccination historymust be considered in the assessment
- Existing differences in vaccination uptake in migrant-origin populations–need for more research

Adult Immunization Board

Specific Population Groups: Travel Vaccines

- What is the uptake?
  - Vaccine hesitancy low
  - Occupational healthcare covers work-related travels
  - A special group of concern: VFR (visiting friends and relatives) difficult to reach
- Future changes
  - THL's role will decrease in 2025 – no longer responsible for the Traveler's Health Guide
  - Vaccine advisory hotline discontinued
  - Updates and guidance on infectious agents (e.g. polio) will continue
- Will other actors take more responsibility?
  - Traveller'sHealth Guide: Finnish Medical Society Duo
  - Vaccine advisory phone:
    - No national solution, activities will vary by Wellbeing service county
    - ID specialists at hospitals: focus on treatment, not prevention
    - Roles for health centers, private travel clinics, mobile units?
    - Global Health Finland/TravelMedicine Section
  - Challenges in guidance and education
    - Guidance on Websites: Need for comprehensive information
    - Education: Basic education: improve coverage in MD curriculum; Continuing education: MDs and nurses

Adult Immunization Board

Preliminary Conclusions

- Adult Immunization is an important and growing public health priority.
- Finland's experience with adult immunization is useful and gives lessons learned from which other countries could profit.
- Transformation of comprehensive Finnish national registers to data warehouses will permit deeper surveillance and analysis of vaccination impact, especially in cooperation with Nordic partners
- Strong epidemiology leads to better modelling, which in turn can empower convincing economic and cost effectiveness arguments to support adult immunization initiatives.
- Overall cultural and behavioural aspects of the overall population in Finland affect the uptake and effectiveness of vaccination campaigns.
- Adult immunization campaigns can be targeted to specific sub populations and messaging needs to be adapted to the particular needs and interests of these sub populations.

Adult Immunization Board