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# Improving national vaccination decision-making through data

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Sandra Evans

AIB Technical Meeting 2026

Session 4  
Role of data quality, interoperability and access  
in shaping vaccination policy

# Evidence base for this perspective

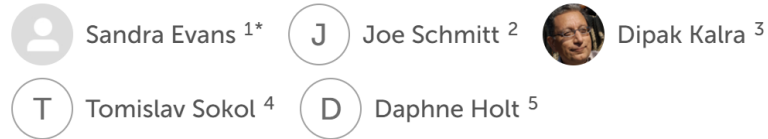
POLICY BRIEF article

Front. Public Health, 17 December 2024

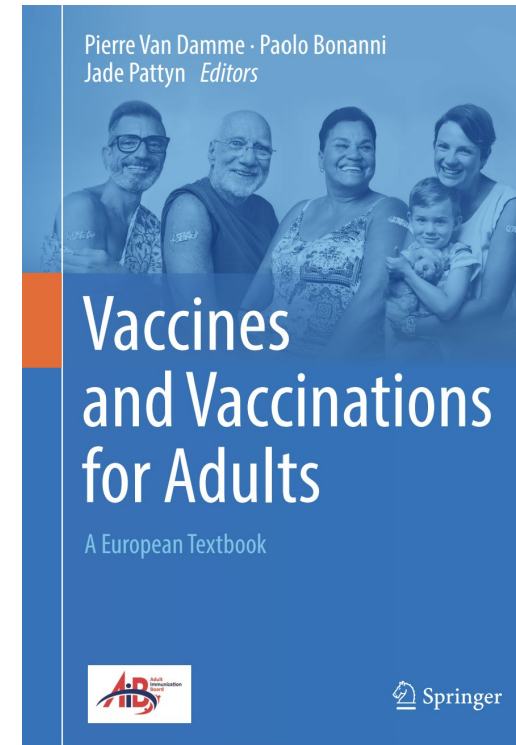
Sec. Infectious Diseases: Epidemiology and Prevention

Volume 12 - 2024 | <https://doi.org/10.3389/fpubh.2024.1407841>

## Policy brief: Improving national vaccination decision-making through data



1. Sandra Evans Health Policy, Liverpool, United Kingdom
2. Global Health Press, Singapore, Singapore
3. The European Institute for Innovation through Health Data, Ghent, Belgium
4. European Parliament, Brussels, Belgium
5. Coalition for Life Course Immunisation, Brussels, Belgium [View less](#)



## Adult Vaccination Policy in Europe: Governance and Key Stakeholders

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Sandra Evans and Mariano Votta

# What vaccination records add

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Vaccination records help turn adult immunisation from something we recommend into something we can measure, evaluate and adapt.

## Coverage

Who is protected? Who is missing?

## Behaviour

Where do adults accept, delay or decline?

## Equity

Which groups or places are underserved?

## Effectiveness

What happens after rollout in real populations?

## Implementation

Which pathways work?  
Could delivery be better targeted or co-delivered?

## Future introduction

What can records tell us about hotspots, capacity and logistics for novel vaccines?

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**Records should not only document what happened.  
They should help decision-makers decide what to do next**

# Why adult vaccination decision-making needs better data

Adult vaccination is not just about whether a vaccine works; it is about who is eligible, who is reached, who is missed, and what happens after rollout.

1

## Adults are heterogeneous

Age, risk status, pregnancy, occupation, travel and chronic illness all shape eligibility.

2

## Delivery is fragmented

Vaccination can occur in primary care, pharmacies, hospitals, workplaces and campaigns.

3

## Behaviour matters

Acceptance, delay, refusal and missed opportunities determine uptake.

4

## Equity is visible

Records can reveal who is consistently underserved.

### Decision-making question

**Can we see who is protected, who is missing, how recommendations perform in real life, and where programmes need to adapt?**

# GRADE Framework: valuable, but needs a wider evidence lens

How should NITAGs adjust their evidence frameworks?

## What GRADE is designed to do

Most NITAGs use GRADE to assess evidence quality and make recommendations. It brings structure, transparency and attention to bias.

## Where adult vaccination policy needs more

Adult decisions also require timeliness, external validity, implementation context, behaviour, equity and real-world uptake.

## Early signals

Clinical observation can raise alarms before high-grade evidence is available.

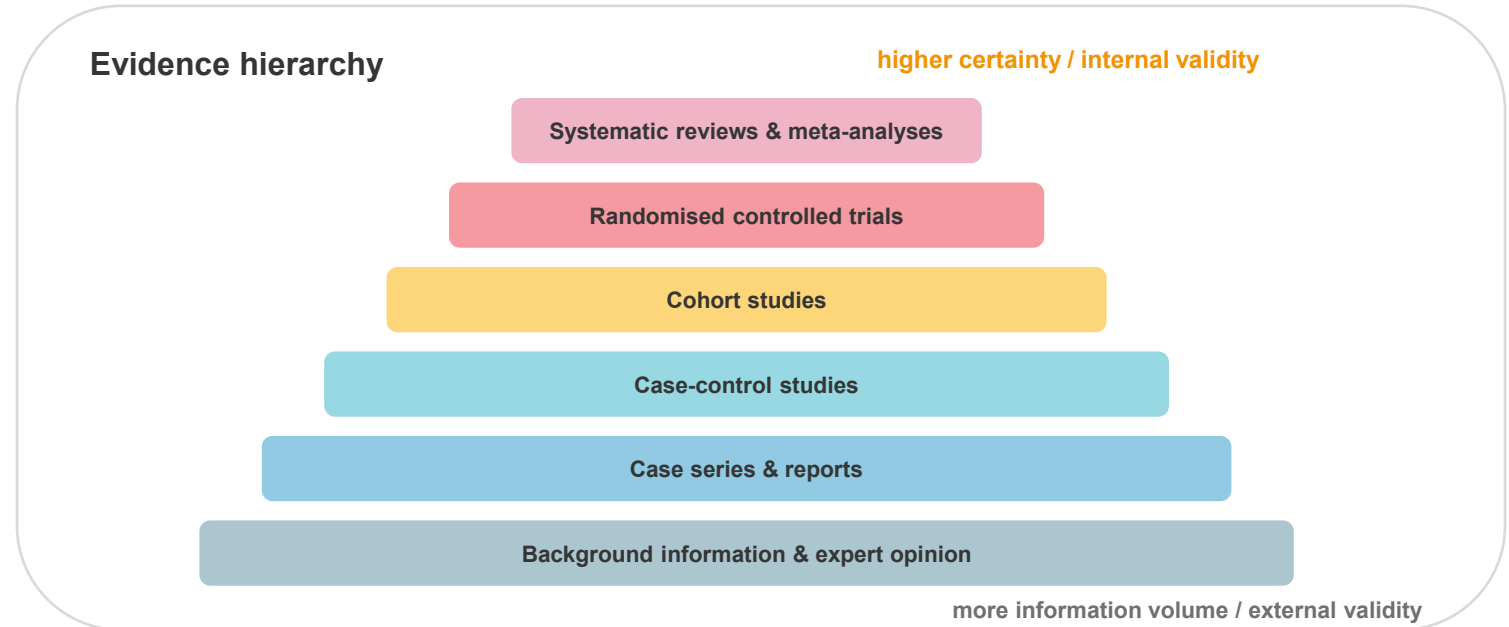
## Register real-world data

Complements RCTs across diverse populations and real vaccination pathways.

## Predictive modelling

Supports faster scenario planning for burden, uptake and programme impact.

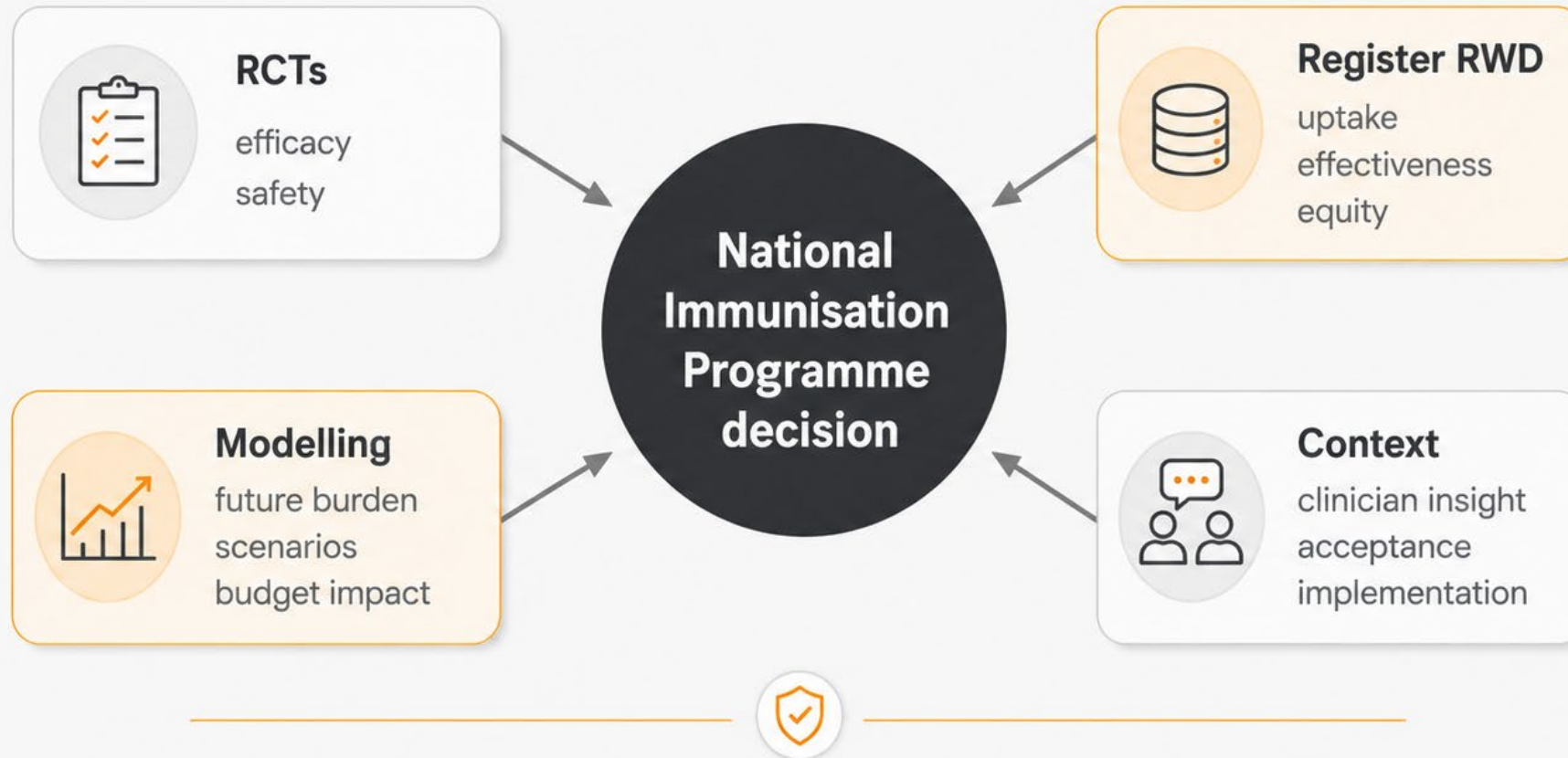
## Evidence hierarchy



**NITAG adjustment: keep GRADE, but broaden evidence-to-decision with register data, early signals and modelling.**

# How NITAG frameworks should adjust

Move from a single evidence hierarchy to policy-oriented triangulation



**Ask the policy question first — then choose and weight the evidence accordingly.**

No single source is sufficient.

# How AI and big data can realistically help

Not a replacement for judgement — a toolbox for faster, richer interpretation

## Machine learning & neural networks

forecast complex, nonlinear trends and outbreak risks

## Natural language processing

analyse vaccine sentiment, hesitancy & misinformation signals

## Anomaly detection & surveillance algorithms

spot unusual patterns in uptake, disease or adverse events

## Record linkage & federated analytics

connect evidence while reducing need to move raw data

## Decision-support dashboards

translate real-time signals for NITAG and program review

**Requires NITAG upskilling + good data governance**

# European Union's role: enabling better national decisions

Health policy remains primarily national, but EU frameworks can improve comparability, secure exchange and continuity of care across borders.



## Why an EU role exists

### Treaty on the Functioning of the European Union (TFEU)

- Article 45: supports free movement across the European Union
- Article 168: requires a high level of human health protection across EU policies and activities



## What the EU can enable

- Common standards
- Interoperability
- Secure data exchange
- Shared learning and toolkits
- Cross-border continuity of care
- Better comparability between Member States



## European Health Data Space (EHDS)

**Provides a solid legal framework for using health data for research, innovation, public health, policy-making and regulatory purposes.**

Under strict conditions, the EHDS can support access to high-quality health data and strengthen evidence on vaccine effectiveness and safety across populations, age groups and regions. It can also support exchange of information on vaccination plans and verification of vaccination certificates.



**The point is not to centralise National Immunisation Technical Advisory Group (NITAG) decisions — it is to make them better informed, more comparable and more connected.**

With free movement comes a need for comparability; with interoperability comes the ability to understand and respond.

# Which decisions benefit most?

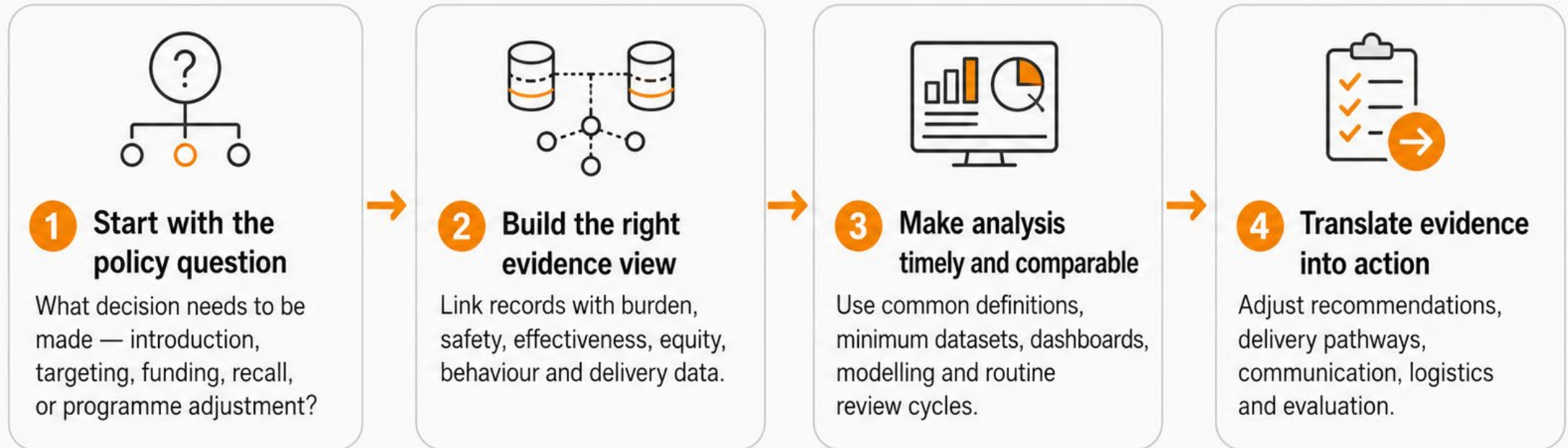
Richer vaccination records support decisions at every level of the health system



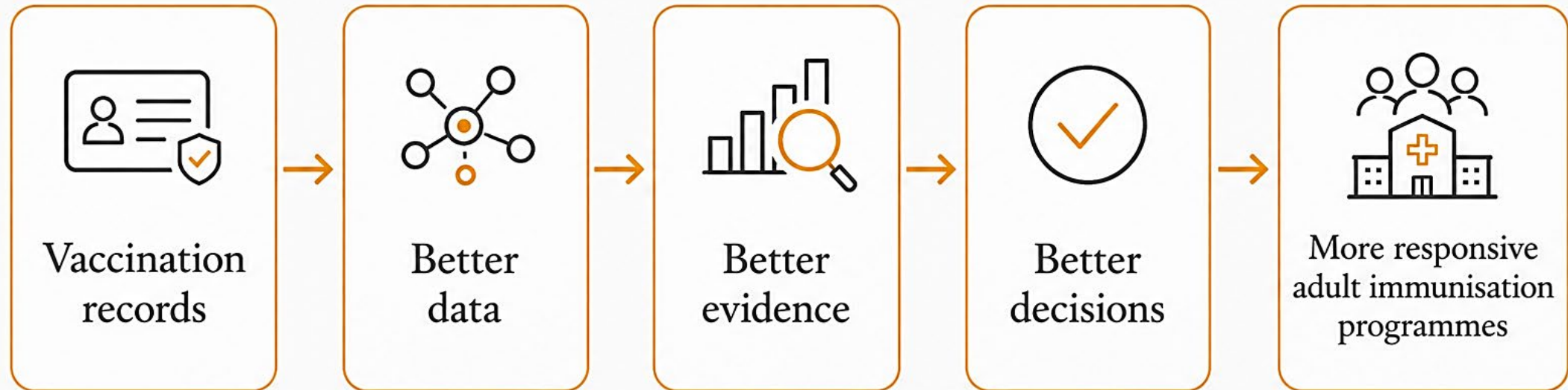
**The same record can support a reminder, a pathway redesign, a NITAG review and European comparability.**

# From vaccination records to decision-ready evidence

The question is not only whether data exist — it is whether NITAGs and programmes can use them to make better decisions.



**Decision-ready evidence is not just collected. It is linked, analysed, interpreted and used.**



*A learning system — not an archive.*

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