ADVANCE

Accelerated **D**evelopment
of **VA**ccine be**N**efit-risk
Collaboration in **E**urope

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What is ADVANCE?

ADVANCE is a project that was supported through the Innovative Medicines Initiative (IMI) in 2013. It has brought together scientists from all major stakeholders interested in post-licensure monitoring of the coverage, benefits and risks of vaccines. The ADVANCE consortium established a public-private collaboration (PPC) to enable rapid and comprehensive development of post-marketing vaccine evidence generation which was not possible in Europe before the project was initiated. Regulators such as the European Medicines Agency (EMA), public health institutes including the European Centre for Disease Control & Prevention (ECDC), numerous vaccine manufacturers and many of Europe's leading academic institutions collaborated to create best practice guidance, methods, tools and capacity to generate rapid evidence on vaccines from existing healthcare data. The ADVANCE consortium has demonstrated that the enormous resource of existing and fragmented European real-world healthcare data can be used to generate actionable evidence on vaccine coverage, benefits and risks for drug regulatory agencies, public health agencies, vaccine manufacturers, health care professionals, and patients.

How did we ADVANCE?

During the project's lifetime, the ADVANCE consortium developed and tested procedures, methods, and workflows to ensure readiness for rapid generation of evidence on coverage, benefits, and risks of vaccines. ADVANCE's deliverables and tools are publicly available at www.advance-vaccines.eu.

Achievements include:

Environment & governance readiness

- Engagement of 47 partners across 19 European countries: 16 academic/public research institutions; 10 public health organisations; 9 national drug regulatory agencies, including the EMA and ECDC; and 7 vaccine manufacturers; 3 small medium enterprises (SMEs); 2 charities.
- Development of best practices (code of conduct) and governance for collaborative vaccine studies.

Methods readiness

- Overview of existing and novel methods for estimation of vaccine coverage, benefits and risks estimation
- Online tools supporting generation of evidence:
  - Codemapper: maps outcome definitions into diagnostic codes across a range of vocabularies.
  - VaccO: a vaccine ontology.
  - Interrelation tool: estimation of outcome validity measures.
  - Vaccine effectiveness misclassification tool.
  - Benefit-risk monitoring: dashboard for visualising vaccine coverage, benefits/risks.

Data source readiness

- A simple common data model for multi-database studies.
- Detailed processes and workflows to assess whether data sources are fit for purpose.
  - Data characterisation of 19 data sources in 8 countries.
  - Age, calendar-year, and gender-specific incidence rates for 25 events of interest.
  - Vaccine coverage estimates by birth cohort, calendar-year, age and target groups.
- Interactive Dashboard to show near real time monitoring of vaccine coverage, benefits and risks.

Study readiness

- Best practice guidance implemented and tested in multi-database studies.
- Templates for study outlines, protocols, declarations of interest, statistical analysis plans, and reports.
- Publicly available protocols and results
- Double-coded SAS and R syntax/programs to transform raw healthcare data into required evidence.
- Operational platforms for the transfer, sharing, and pooling of data.

Implementation plan

- Blueprint describing how to use the ADVANCE systems for monitoring vaccine coverage, benefits and risks in Europe; created by the ECDC, that has undergone public consultation.

VAC4EU

The ADVANCE project funding by IMI ends in March 2019. To implement its vision and enable actionable and rapid evidence-generation on the effects of vaccines in a collaborative manner, the consortium has decided to create a multi-stakeholder scientific community and an operational study network, which will have an official status as a legal entity with articles of incorporation with the following principles:

- **VAC4EU** will be a not-for profit legal entity (international association), with both personal (community) and institutional membership (study network).
- **VAC4EU** will provide access to a well characterised public study network, which can provide data access and perform studies for different external requesters (e.g. vaccine manufacturers, European Commission, regulators, public health institutes) or internally.
- **VAC4EU** will have independent scientific and audit committees for oversight.

For further information please visit www. vac4eu.org.

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ADVANCE Partners

- Aarhus Universitetshospital (Denmark)
- Agencia Española de Medicamentos y Productos Sanitarios (Spain)
- Agenzia Regionale di Sanita, Toscana (Italy)
- Azienda Sanitaria Locale della Provincia di Cremona (Italy)
- Erasmus Universitair Medisch Centrum Rotterdam (Netherlands)
- European Centre for Disease Prevention and Control (Sweden)
- European Medicines Agency (United Kingdom)
- GlaxoSmithKline Biologicals, S.A. (Belgium)
- Janssen Vaccines - Prevention B.V. (Belgium)
- Jordi Gol Fundació Institut Universitari per a la Recerca a l'Atenció Primària de Salut Jordi Gol i Gurina, Barcelona (Spain)
- Karolinska Institutet (Sweden)
- London School of Hygiene and Tropical Medicine (United Kingdom)
- Medicines and Healthcare products Regulatory Agency (United Kingdom)
- Merck Sharp & Dohme Corp (USA)
- National Institute for Public Health and the Environment (Netherlands)
- Novartis Pharma AG (Switzerland)
- P95 (Belgium)
- Pfizer Limited (United Kingdom)
- Royal College of General Practitioners (United Kingdom)
- Sanofi Pasteur (France)
- Sciensano (Belgium)
- Società Servizi Telematici SRL (Italy)
- Statens Serum Institut (Denmark)
- Synapse Research Management Partners, S.L. (Spain)
- Takeda Pharmaceuticals International AG (Switzerland)
- Tampereen Yliopisto (Finland)
- The Open University (United Kingdom)
- The University of Surrey (United Kingdom)
- Universitaet Basel (Switzerland)

ADVANCE Associate partners

- Brighton Collaboration Foundation (Switzerland)
- Foundation for the Promotion of Health and Biomedical Research (Spain)
- French National Agency for Medicines and Health Products Safety (France)
- Helenic Medicines Agency, National Organisation for Medicines (Greece)
- Hellenic Centre for Disease Control and Prevention (Greece)
- Hellenic National School of Public Health (Greece)
- Imperial College London (UK)
- Institut de Recherche et Développement (France)
- Irish Medicines Board (Ireland)
- Italian Medicines Agency (Italy)
- National Center for Epidemiology (Hungary)
- National Institute for Health and Welfare (Finland)
- Polish Medicines Agency (Poland)
- Public Health England (UK)
- State Medicines Control Agency (Lituania)
- University Medical Center Utrecht (Netherlands)
- University of Athens (Greece)
- University of Messina (Italy)
- VACCINE.GRID foundation (Switzerland)

Unique capacity in Europe for high quality and rapid studies/monitoring activities on vaccine benefits and risks