ECDC Vaccine Effectiveness, Burden and Impact Studies (VEBIS) for COVID-19 and Influenza

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8th Joint WHO Regional Office for Europe & European Centre for Disease Prevention and Control Annual European Influenza and COVID-19 Surveillance Meeting 2022, 7 October 2022

Post marketing vaccine monitoring system – part of the approved ECDC's legal mandate

EUROPEAN COMMISSION

Brussels, 11.11.2020
COM(2020) 726 final

2020/0320 (COD)

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

amending Regulation (EC) No 851/2004 establishing a European Centre for disease prevention and control

"The Centre shall coordinate **independent post-marketing effectiveness and safety** monitoring studies *collecting new information and/or using the relevant data collected by competent bodies*. That work shall be conducted **jointly with the European Medicines Agency** and notably through a new **vaccine monitoring platform**".

- **2010** BE Presidency H1N1 lessons learnt
- 2014 Council Conclusions
- 2015 Joint ECDC/EMA paper to SANTE and MBs
- 2017 Joint ECDC/EMA financial proposal as part of the EU MFF
- 2018 Council Recommend ation
- 2019-2020 ECDC/EMA request for sustainable funding to SANTE
- 2020 SANTE adopts Health Union proposal with new Agencies' mandates
- **2020** SANTE provides first funds for COVID-19 vaccine studies

VEBIS* project

VEBIS: Vaccine Effectiveness, Burden and Impact Studies

- For COVID and Influenza (since end of 2020)

Four multi-country studies with pooled analysis approach

In this first period vaccine effectiveness objectives have been prioritized

Hospital and primary care studies mainly based on long-standing influenza VE networks (I-MOVE; I-MOVE COVID-19)

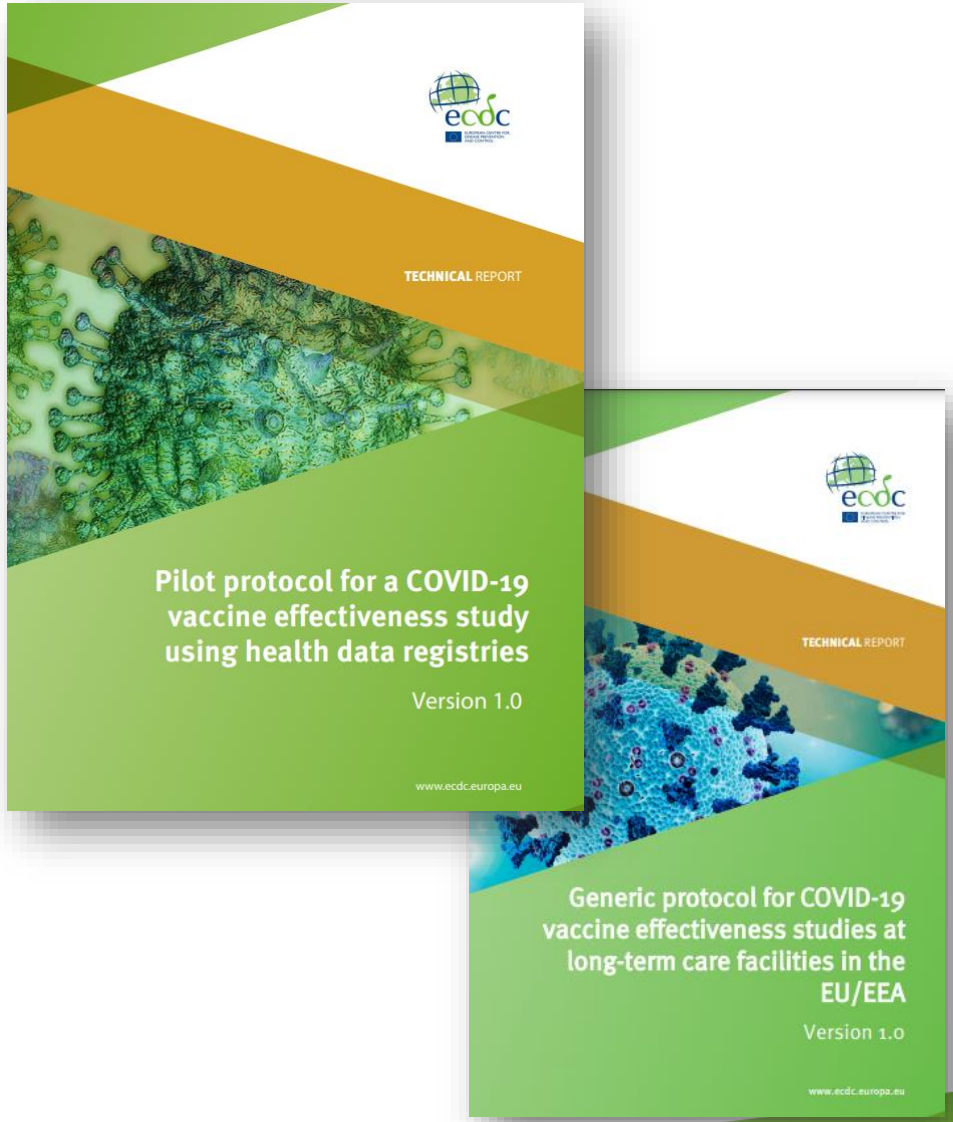
VEBIS project implemented through an Open Call for tender awarded to Epiconcept

*Vaccine Effectiveness, Burden and Impact Studies for COVID-19 and Influenza

ECDC VEBIS studies

Setting [no. of contract]	Type of study	Main outcome	Countries
Hospitals	Test negative design	Severe disease; **influenza** and COVID-19	BE HR CZ FR DE EL IE HU LT LU NL MT PT ES RO
Health care workers cohort	Cohort study	Infection, COVID-19	HR IE IT PT ES LV EE PO EL
Electronic health care databases	Cohort study	Hospitalisation, COVID-19	DK, ES, NO, PT (BE, LU, NL)
Primary care	Test negative design	Moderate disease (~ARI/ILI), Influenza and COVID-19	HR FR DE HU IE NL ES PT RO SE
Long term care facilities	Cohort study (protocol only)	Symptomatic disease, COVID-19	Protocol only
Outbreaks	Cohort and case control (protocol only)	Symptomatic disease, COVID-19	Protocol only

Leveraging international protocols as well as creating and pilot new protocols



Leveraging SARI surveillance as part of the VEBIS studies

Support to SARI surveillance

in 13 EU countries

And

In the 6 countries of the Western Balkan Region

ECDC-IPA6 Action

ECDC-IPA6	Work stream 1	Work stream 2	Work stream 3
Scope	Preparatory measures for participation of IPA beneficiaries' authorities in ECDC activities and systems	Advancement of One Health responses against AMR	Enhancing SARI surveillance to support the implementation of fit-for-purpose surveillance systems
Beneficiaries	Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia, and Turkey		Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia
Budget	400.000 EUR	600.000 EUR	1.500.000 EUR

Work Stream 1. Preparatory measures for the participation of the Western Balkans and Turkey in ECDC

Focus area 1.1 Strengthening surveillance and data sharing
Focus area 1.2 Public health microbiology laboratory system capacities
Focus area 1.3 Public health emergency preparedness and coordination

Work Stream 2. Advancement of One-Health responses against AMR

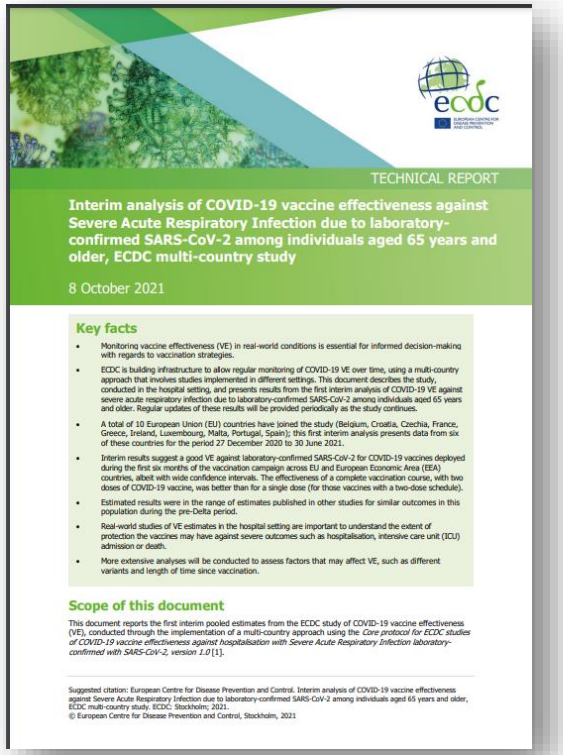
Focus area 2.1 Gap analysis and country roadmaps on One-Health against AMR in WB
Focus area 2.2 Support to the development of an electronic surveillance of AMR
Focus area 2.3 Antibiotic awareness raising and securing political commitment

Work Stream 3 Enhancing SARI surveillance and a follow-up on vaccine effectiveness

Adopted and implemented national surveillance protocols ensuring their compliance with generic SARI protocol
SARI surveillance data routinely reported to ECDC according to pre-defined ECDC standards and EU-level requirements
Engage Western Balkans in ECDC VEBIS for infectious respiratory diseases (as a possible follow-up)

This ECDC activity is prepared with financial support of the European Union under ECDC-IPA6/2019/409-781

Pooled analysis within the studies and beyond



TECHNICAL REPORT

Interim analysis of COVID-19 vaccine effectiveness against Severe Acute Respiratory Infection due to laboratory-confirmed SARS-CoV-2 among individuals aged 65 years and older, ECDC multi-country study

8 October 2021

Key facts

- Monitoring vaccine effectiveness (VE) in real-world conditions is essential for informed decision-making with regards to vaccination strategies.
- ECDC is building infrastructure to allow regular monitoring of COVID-19 VE over time, using a multi-country approach that involves studies implemented in different settings. This document describes the study, conducted in the hospital setting, and presents results from the first interim analysis of COVID-19 VE against severe acute respiratory infection due to laboratory-confirmed SARS-CoV-2 among individuals aged 65 years and older. Regular updates of these results will be provided periodically as the study continues.
- A total of 10 European Union (EU) countries have joined the study (Belgium, Croatia, Czechia, France, Greece, Ireland, Luxembourg, Malta, Portugal, Spain); this first interim analysis presents data from six of these countries for the period 27 December 2020 to 30 June 2021.
- Interim results suggest a good VE against laboratory-confirmed SARS-CoV-2 for COVID-19 vaccines deployed during the first six months of the vaccination campaign across EU and European Economic Area (EEA) countries, albeit with wide confidence intervals. The effectiveness of a complete vaccination course, with two doses of COVID-19 vaccine, was better than for a single dose (for those vaccines with a two-dose schedule).
- Estimated results were in the range of estimates published in other studies for similar outcomes in this population during the pre-Delta period.
- Real-world studies of VE estimates in the hospital setting are important to understand the extent of protection the vaccines may have against severe outcomes such as hospitalisation, intensive care unit (ICU) admission or death.
- More extensive analyses will be conducted to assess factors that may affect VE, such as different variants and length of time since vaccination.

Scope of this document

This document reports the first interim pooled estimates from the ECDC study of COVID-19 vaccine effectiveness (VE), conducted through the implementation of a multi-country approach using the *Core protocol for ECDC studies of COVID-19 vaccine effectiveness against hospitalisation with Severe Acute Respiratory Infection laboratory-confirmed with SARS-CoV-2, version 1.0* [1].

Suggested citation: European Centre for Disease Prevention and Control. Interim analysis of COVID-19 vaccine effectiveness against Severe Acute Respiratory Infection due to laboratory-confirmed SARS-CoV-2 among individuals aged 65 years and older, ECDC multi-country study. ECDC: Stockholm; 2021.

Research

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Effectiveness of complete primary vaccination against COVID-19 at primary care and community level during predominant Delta circulation in Europe: multicentre analysis, I-MOVE-COVID-19 and ECDC networks, July to August 2021

Check for updates

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Rapid communication

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Estimation of COVID-19 vaccine effectiveness against hospitalisation in individuals aged ≥ 65 years using electronic health registries; a pilot study in four EU/EEA countries, October 2021 to March 2022

Check for updates

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Acknowledgments

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- **Epiconcept:** M Maurel, M Valenciano, A Moren, A Rose, V Nancey, C Laniece Delauney

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Study sites HCW study

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- Greece: C. Mitsi; K. Tryfinopoulou; O. G Panagiotakopoulos
- Ireland (Galway): C. Fleming; (St. James): C. Bergin; (Beaumont): Beaumont: E. deBarra
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VEBIS hospital influenza and COVID-19 VE

15 study sites in 14 countries

Patients admitted to hospital for SARI

Test-negative design

All/systematic selection of SARI patients

Demographic, clinical, laboratory information

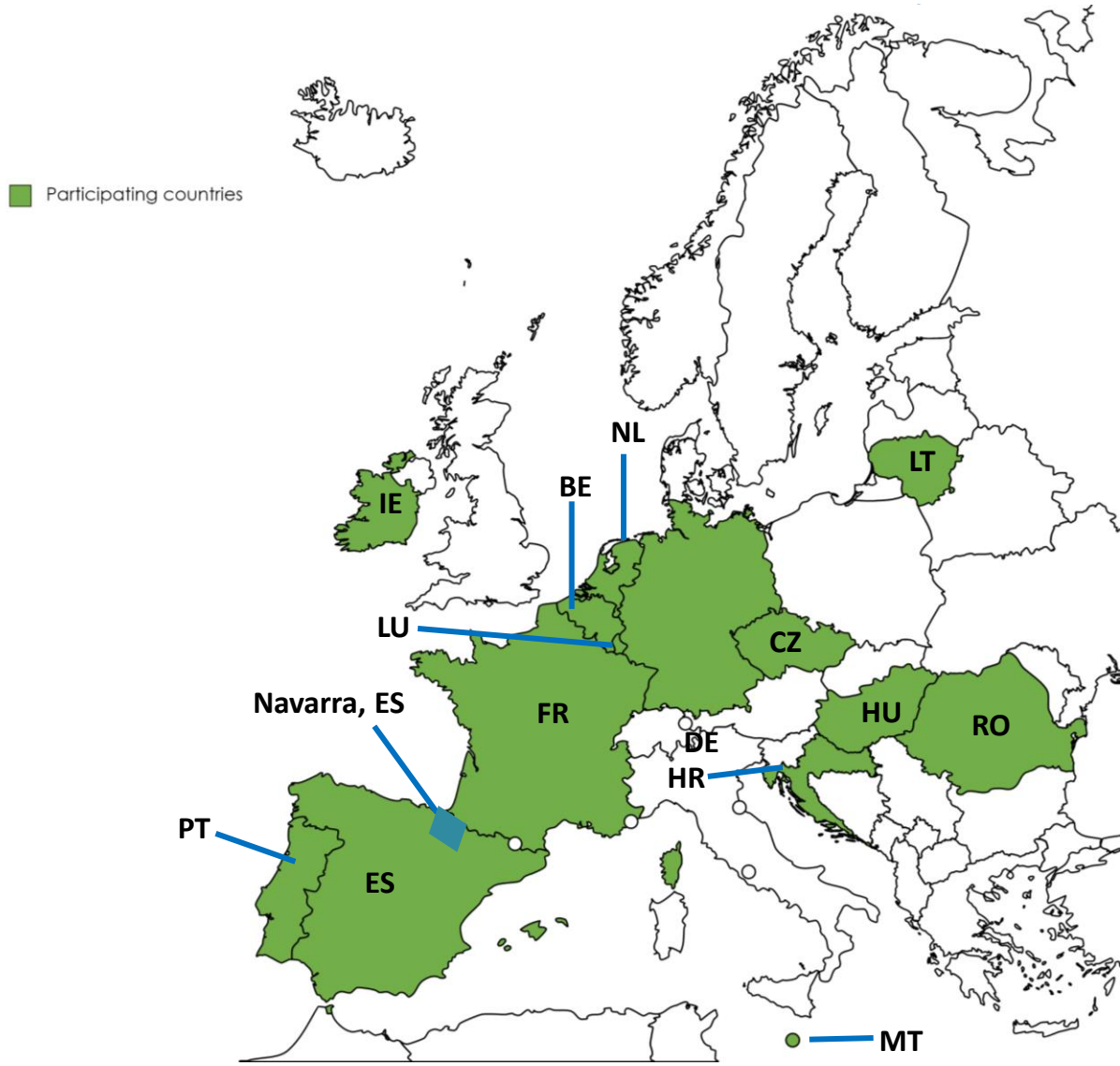
Samples tested for influenza and SARS-CoV-2

Influenza VE estimates

- mid- and end-of-season (start: 2022/23 season)

COVID-19 VE estimates

- ad hoc, as epidemiological situation warrants
  - so far, four to six times per year



HCW COVID-19 VE studies

20 hospitals in 9 countries

Prospective cohort study design

All HCWs invited (clinical & ancillary staff)

Demographic, clinical, community & in-hospital exposures, laboratory information

Weekly/biweekly molecular testing for SARS-CoV-2 and serology testing every 4-12 weeks

COVID-19 VE estimates

- ad hoc, as epidemiological situation warrants

Primary care influenza and COVID-19 VE

11 study sites in 10 countries

Patients consulting physicians for ARI/ILI

Test-negative design

All/systematic selection of patients

Demographic, clinical, laboratory information

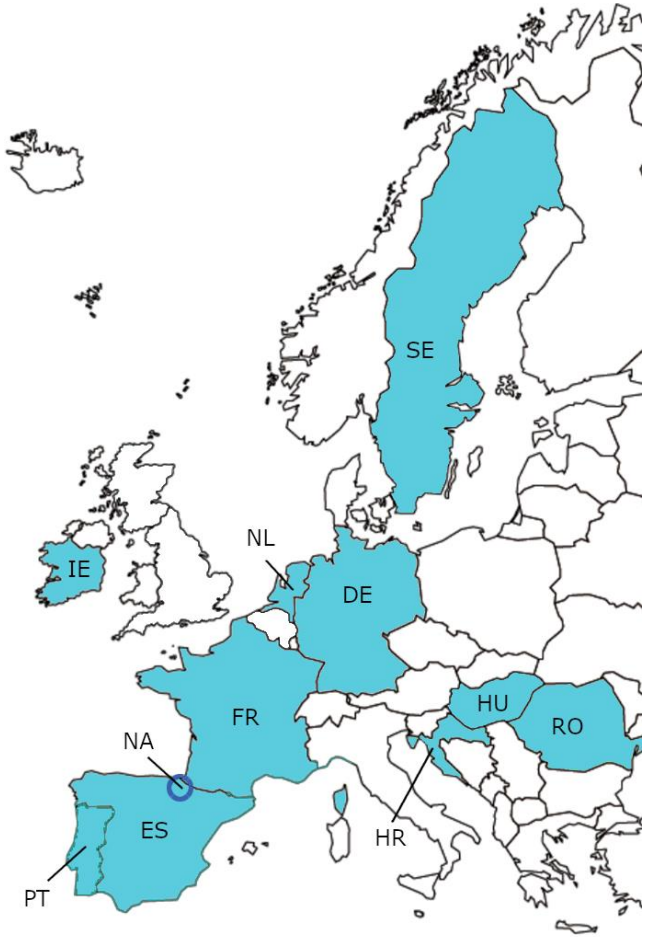
All samples tested for influenza and SARS-CoV-2

Influenza VE results:

- Mid-season, end-of-season, real-time (2021-22)

COVID-19 VE results:

- Ad hoc, as epidemiological situation warrants



VEBIS electronic health registries and COVID-19 VE

Seven sites to participate:

- 4 in 1st phase: Denmark, Navarra (Spain), Norway, Portugal
- 3 in 2nd phase: Belgium, Luxembourg, Netherlands

Cohorts study design

Linkage of EHR: administrative, vaccination registries, SARS-CoV-2 tests, hospitalisations, and healthcare databases

Multiple outcomes including hospitalisation, ICU admission, mortality

Exclusion of those with previous SARS-CoV-2 infection at enrolment and residents of long-term care facilities, and those outside target vaccination group

Monthly reporting of VE of primary and booster doses

- 8 week estimates
- 1 month lag in report

ECDC VEBIS studies

Setting [no. of contract]	Type of study	Main outcome	References
Hospitals	Test negative design	Severe disease; **influenza** and COVID-19	https://www.ecdc.europa.eu/en/publications-data/interim-analysis-covid-19-vaccine-effectiveness-against-severe-acute-respiratory
Health care workers cohort	Cohort study	Infection, COVID-19	
Electronic health care databases	Cohort study	Hospitalisation, COVID-19	https://www.ecdc.europa.eu/en/publications-data/covid-19-pilot-protocol-vaccine-effectiveness-study-using-health-data-registries
Primary care	Test negative design	Moderate disease (~ARI), Influenza and COVID-19	
Long term care facilities	Cohort study (protocol only)	Symptomatic disease, COVID-19	https://www.ecdc.europa.eu/en/publications-data/generic-protocol-covid-19-vaccine-effectiveness-studies-long-term-care-facilities
Outbreaks	Cohort and case control (protocol only)	Symptomatic disease, COVID-19	https://www.ecdc.europa.eu/en/publications-data/covid-19-vaccine-effectiveness-outbreaks-semi-closed-settings

Overview of ECDC funded VE studies

VE against **severe disease**; leveraging efforts of SARI surveillance at hospital level and other international protocols (I-MOVE-COVID-19 and WHO)
- COVID-19 and Influenza
- 14 countries (BE HR CZ FR DE EL IE LI LU MT PT ES LT RO)
- Test negative design, primary data collection
- Population of the study: individuals eligible for vaccination according to national vaccination programmes

VE against **moderate disease**; levering efforts of sentinel primary care surveillance and other international protocols (I-MOVE-COVID-19)
- COVID-19 and Influenza
- 10 countries (HR FR DE HU IE NL ES PT RO SE)
- Test negative design, primary data collection
- Population of the study: individuals eligible for vaccination according to national vaccination programmes

VE against **infection**, leveraging efforts of other international protocols (WHO)
- COVID-19
- 7 countries (active: HR IE IT PT ES LV) (ended: EE) (under discussion PO EL)
- Cohort study, primary data collection with repeated sampling (serology and oral fluid/NP sample)
- Population of the study: health care workers of hospitals (including adm staff in some setting)
- Ad hoc study: VE transmission VE in nosocomial setting (tbc)

VE **assessed through Health Care Databases**
- Population health databases
- COVID-19
- Pilot study: 4 countries (DK, NO, PT, ES) // VE against hospital admission in age +65 years; by age group and by time since booster vaccination /// 3 additional countries interested to join
- Retrospective cohort study
- Landscape report on available health databases across MS

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Study participants

ECDC COVID-19 vaccine effectiveness hospital study participants:

- **Belgium, Universitair Ziekenhuis Brussel:** T Demuyser, L Seyler, E Van Nedervelde
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ECDC: Sabrina Bacci, Nathalie Nicolay

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