

# Vaccine Effectiveness, Burden and Impact Studies (VEBIS) - Vaccine effectiveness hospital admission with Severe Acute Respiratory Infection

**First published:** 04/04/2024

**Last updated:** 03/04/2025

Study

Ongoing

## Administrative details

### EU PAS number

EUPAS1000000099

### Study ID

1000000099

### DARWIN EU® study

No

### Study countries

☐ Belgium

☐ Croatia

☐ Czechia

- ☐ Hungary
  - ☐ Ireland
  - ☐ Lithuania
  - ☐ Luxembourg
  - ☐ Malta
  - ☐ Portugal
  - ☐ Romania
  - ☐ Spain
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### **Study description**

This is a multi-country hospital-based study of vaccine effectiveness against hospitalisation with Severe Acute Respiratory Infection laboratory-confirmed with SARS-CoV-2 or with influenza.

This is a case-control study using a test negative design. The study population consists of individuals of all ages, belonging to the target group for COVID-19 or influenza vaccination, hospitalised with SARI symptoms and no contra-indication for being vaccinated with the vaccine of interest. The study period runs during the influenza circulation season for influenza vaccine effectiveness study.

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### **Study status**

Ongoing

## Research institutions and networks

### Institutions

# European Centre for Disease Prevention and Control

## EpiConcept

**First published:** 01/02/2024

**Last updated:** 01/02/2024

Institution

## Contact details

### Study institution contact

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Study contact

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### Primary lead investigator

Angie Rose

Primary lead investigator

## Study timelines

### Date when funding contract was signed

Actual: 13/10/2021

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**Study start date**

Actual: 01/12/2021

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**Date of final study report**

Planned: 31/10/2025

## Sources of funding

- Other

## More details on funding

Funded by European Centre for Disease Prevention and Control

## Study protocol

[covid-19-vaccine-effectiveness-sari-protocol-version-2.pdf](#)(4.95 MB)

## Regulatory

**Was the study required by a regulatory body?**

No

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**Is the study required by a Risk Management Plan (RMP)?**

Not applicable

## Methodological aspects

### Study type

### Study type list

**Study topic:**

Human medicinal product

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**Study type:**

Non-interventional study

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**Scope of the study:**

Effectiveness study (incl. comparative)

**Data collection methods:**

Primary data collection

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**Study design:**

This is a multi-centre, hospital-based, test-negative, case-control study, using pooled data from several countries.

**Main study objective:**

The primary objective of this vaccine effectiveness study is:

- To measure, within each European participating country and in a pooled, multi-country analysis, the direct effect (effectiveness) of overall and product-specific COVID-19 vaccines against SARI due to laboratory confirmed SARS-CoV-2 in hospitalised patients, in order to provide up-to-date information on the ability of COVID-19 vaccines to prevent severe disease under real conditions of use.

## Study Design

**Non-interventional study design**

Case-control

## Study drug and medical condition

**Name of medicine**

COMIRNATY

JCOVDEN

NUVAXOVID

SPIKEVAX

VAXZEVRIA

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**Study drug International non-proprietary name (INN) or common name**

COVID-19 MRNA VACCINE (NUCLEOSIDE-MODIFIED)

COVID-19 VACCINE (RECOMBINANT, ADJUVANTED)

DAVESOMERAN

ELASOMERAN

IMELASOMERAN

RAXTOZINAMERAN

TOZINAMERAN

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**Anatomical Therapeutic Chemical (ATC) code**

(J07BN01) covid-19, RNA-based vaccine

covid-19, RNA-based vaccine

(J07BN02) covid-19, viral vector, non-replicating

covid-19, viral vector, non-replicating

(J07BN04) covid-19, protein subunit

covid-19, protein subunit

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**Medical condition to be studied**

COVID-19

Influenza

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**Additional medical condition(s)**

Severe Acute Respiratory Infection (SARI)

## Population studied

## **Short description of the study population**

This hospital-based vaccine effectiveness study was conducted primarily in countries with pre-existing SARI surveillance systems, to facilitate the recruitment of patients. Therefore, the study population comprised individuals of all ages who belonged to the target group for vaccination, were hospitalised with SARI symptoms in participating hospitals/services and had no contraindication for COVID-19 vaccination.

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### **Age groups**

Paediatric Population (< 18 years)

Preterm newborn infants (0 – 27 days)

Term newborn infants (0 – 27 days)

Infants and toddlers (28 days – 23 months)

Children (2 to < 12 years)

Adolescents (12 to < 18 years)

Adult and elderly population ( $\geq 18$  years)

Adults (18 to < 65 years)

Adults (18 to < 46 years)

Adults (46 to < 65 years)

Elderly ( $\geq 65$  years)

Adults (65 to < 75 years)

Adults (75 to < 85 years)

Adults (85 years and over)

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### **Estimated number of subjects**

5500

## **Study design details**

## Setting

All SARI patients who consented to participate (where this is a requirement) and were not part of the exclusion

criteria were included in the study. Patients were not enrolled in the study if they:

- were unwilling to participate or unable to communicate and give consent (the consent could also have been provided by their legal representative or by specific consent procedures that are acceptable according to the local ethical review process);
- had a contraindication for the COVID-19 vaccine;
- could not be swabbed due to severe septum deviation, obstruction or other conditions that contraindicate;

or

- had a history of hospitalisation within the 14 days immediately prior to this admission (including transfers from other hospitals).

Patients were not included in this analysis if they:

- were living in a long-term care facility;
- had errors in vaccination dates (e.g. first dose date was later than second dose date) or a non-recommended delay between the doses for two-dose regimens (<21 days for Comirnaty, <28 days for Vaxzevria or Spikevax);
- had onset of SARI symptoms >3 days after their swab;
- were swabbed >10 days after symptom onset; or
- received the first or second vaccine dose within 14 days of symptom onset.

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## Comparators

An individual was considered vaccinated against COVID-19 with a product-specific vaccine under the following categories:



- Fully vaccinated with the primary series (two-dose vaccine): patients were considered fully vaccinated if they received both doses at least 14 days\* before symptom onset (whether homologous or heterologous vaccine products were received).
- Fully vaccinated with the primary series (single-dose vaccine): patients were considered fully vaccinated if they received one dose at least 14 days\* before symptom onset.
- Fully vaccinated with the primary series plus booster: patients were considered fully vaccinated with the primary series plus booster if they were fully vaccinated (according to the definitions above), followed by a booster dose at least 14 days\* before symptom onset.
- Partially vaccinated (two-dose vaccine): patients were considered partially vaccinated if they received only one of the two primary series doses at least 14 days\* before symptom onset or received the second dose on the same day as or after symptom onset.
- Unvaccinated: patients were considered unvaccinated if they did not receive a COVID-19 vaccine or if they were vaccinated on the same day as or after symptom onset.

The period between December 2021 and September 2022 was used as a proxy for the Omicron-dominant period, using GISAID data to define week numbers for each participating country when  $\geq 80\%$  or  $< 80\%$  sequenced samples belonged to the Omicron variant.

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## Outcomes

The outcome of interest for the primary analysis was SARS-CoV-2 infection that was laboratory confirmed by RT-PCR (documented either on admission to hospital or within 14 days before admission) in patients of all ages who were hospitalised with SARI symptoms

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## Data analysis plan

The vaccine effectiveness estimated in this analysis was among hospitalised SARI patients aged 20 years and older, who were swabbed between 20 December 2021 and 30 September 2022. Vaccine effectiveness for fully vaccinated with the primary series plus booster was calculated relative to unvaccinated patients. Relative vaccine effectiveness for fully vaccinated with the primary series plus booster was calculated relative to patients who were fully vaccinated with the primary series (single or two-dose vaccination). Vaccine effectiveness is calculated as 1 minus the odds ratio (OR), where the OR is estimated from logistic regression (OR is the ratio of the odds of being vaccinated among cases over the odds of being vaccinated among controls). Study site (country) was included in the logistic regression as a fixed effect, with date of swab modelled as swab month (as a categorical variable) or as a restricted cubic spline of swab date. Additional adjustments included sex, age group (as a categorical variable), and at least one of four commonly collected chronic conditions (diabetes, heart disease, lung disease and asthma). For the age-specific vaccine effectiveness estimates, SARI patients were stratified into three age groups: 20–59 years, 60–79 years and  $\geq 80$  years. For time-since vaccination-specific vaccine effectiveness estimates, vaccinated SARI patients were stratified into 14–59 days, 60–119 days, 120–179 days, 180–239 days and 240–299 days since booster dose vaccination. To avoid sparse data bias, vaccine effectiveness estimates were not calculated where the total number of vaccinated cases and controls was fewer than 20.

## Documents

[Interim analysis of COVID-19 vaccine effectiveness against Severe Acute Respira...](#)

## Data management

### Use of a Common Data Model (CDM)

**CDM mapping**

No

Data quality specifications

**Check conformance**

Unknown

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**Check completeness**

Unknown

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**Check stability**

Unknown

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**Check logical consistency**

Unknown

Data characterisation

**Data characterisation conducted**

Not applicable