# DARWIN EU® EHDS Use Case: Natural history of coagulopathy in COVID-19 patients and persons vaccinated against SARS-CoV-2 in the context of the OMICRON variant

**First published:** 03/10/2023

**Last updated:** 16/10/2024

Study Ongoing

## Administrative details

**EU PAS number**

EUPAS106679

**Study ID**

107276

**DARWIN EU® study**

Yes

**Study countries**

- ☐ Estonia
- ☐ Germany

- [ ] Netherlands
- [ ] Spain
- [ ] United Kingdom

**Study description**

The aim of the study is to contextualize the risk of venous and arterial thromboembolic events associated with COVID-19, during the Omicron period, and SARS-CoV-2 vaccination. The research objectives which will be addressed incrementally to support the project aim are to estimate the background incidence rate of venous and arterial thromboembolic events among the general pre-pandemic population, to estimate the incidence rate of venous and arterial thromboembolic events among patients with COVID-19 within 30-, 60-, and 90- and 180-days during the Omicron period, stratified by prior SARS-CoV-2 vaccination and prior infection status, to estimate the incidence rate of venous and arterial thromboembolic events among patients with SARS-CoV-2 vaccination within 30-, 60-, 90- and 180-days, stratified by prior infection status, to estimate the association between clinical risk factors including prior SARS-CoV-2 vaccination on the incidence rate of venous and arterial events among patients with COVID-19 and the impact that thromboembolic events have on worsening severity of COVID-19 during the Omicron period and to estimate incidence rate ratios for venous and arterial thromboembolic events among patients with COVID-19 and people vaccinated against SARS-CoV-2, compared to the background population using incidence rates estimated in objectives 1 to 3.

**Study status**

Ongoing

## Research institutions and networks

## Institutions

### Fundació Institut Universitari per a la Recerca a l'Atenció Primària de Salut Jordi Gol i Gurina, IDIAPJGol

☐ Spain

**First published:** 05/10/2012

**Last updated:** 23/05/2025

**Institution** | **Educational Institution** | **Laboratory/Research/Testing facility** | **Not-for-profit** | **ENCePP partner**

## Networks

### Data Analysis and Real World Interrogation Network (DARWIN EU®)

☐ Belgium
☐ Croatia
☐ Denmark
☐ Estonia
☐ Finland
☐ France
☐ Germany
☐ Greece
☐ Hungary

- [ ] Italy
- [ ] Netherlands
- [ ] Norway
- [ ] Portugal
- [ ] Spain
- [ ] Sweden
- [ ] United Kingdom

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

**Last updated:** 30/04/2025

Network

## Contact details

**Study institution contact**

Ilse Schuemie study@darwin-eu.org

Study contact

study@darwin-eu.org

**Primary lead investigator**

Marti Catala Sabate

Primary lead investigator

## Study timelines

**Date when funding contract was signed**

Planned: 26/07/2023

Actual: 26/07/2023

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**Study start date**
Planned: 01/12/2021

Actual: 01/12/2021

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**Date of final study report**
Planned: 30/12/2023

## Sources of funding

- EMA

## Study protocol

Study Protocol P2 C3-001 Version 3.1 final.pdf (994.09 KB)

## Regulatory

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

Yes

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

Not applicable

# Methodological aspects

## Study type

## Study type list

**Study type:**

Non-interventional study

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**Main study objective:**

To estimate the background incidence rate of venous and arterial thromboembolic events among the general pre-pandemic population. To estimate the incidence rate of venous and arterial thromboembolic events among patients with COVID-19 within 30-, 60-, and 90- and 180-days during the Omicron period

## Study Design

**Non-interventional study design**

Cohort

## Study drug and medical condition

**Anatomical Therapeutic Chemical (ATC) code**

(J07BN) Covid-19 vaccines

Covid-19 vaccines

## Population studied

**Age groups**

- Adults (18 to < 46 years)
- Adults (46 to < 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**

18890000

## Study design details

**Outcomes**

Venous thromboembolic events: In the primary analysis, venous thromboembolic events will be identified by diagnostic codes for pulmonary embolism or deep vein thrombosis. Arterial thromboembolic events: In the primary analysis, arterial thromboembolic events will be identified by diagnostic codes for an acute myocardial infarction or acute ischemic stroke.
Venous thromboembolic events: In a secondary analysis pulmonary embolism and deep vein thrombosis will be assessed separately. We will also assess portal vein thrombosis, splanchnic venous thrombosis (SVT) and cerebral venous sinus thrombosis separately. Arterial thromboembolic events: In a secondary analysis acute myocardial infarction and acute ischemic stroke will be assessed separately.

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**Data analysis plan**

Objective 1 - 3: We will use Poisson models to estimate incidence rates and 95% confidence interval. Overall, age group, and sex specific rates will be reported. Within each age-sex strata, rates by prior COVID-19 diagnosis, prior vaccination status and brand, and whether patients are immunosuppressed will be reported as well when event number is larger than 5 within the strata.
Objective 4a: To assess the association between potential risk factors on the incidence of venous and arterial thromboembolic events among patients with

COVID-19 during the Omicron period, cause-specific Cox models will be used to calculate hazard ratios for the incidence of venous and arterial thromboembolic events for each of the COVID-19 cohorts. Adjusted models will evaluate potential predictors including age, sex, prior COVID-19 infection status, prior vaccination status and brand, cancer, whether patients were immunocompromised on the index date, prior use of antithrombotics, prior use of corticosteroids.

## Documents

**Study report**

DARWIN EU_P2_C3_001_EHDS_Study_Report_V3.pdf (3.23 MB)

# Data management

## ENCePP Seal

The use of the ENCePP Seal has been discontinued since February 2025. The ENCePP Seal fields are retained in the display mode for transparency but are no longer maintained.

## Data sources

**Data source(s)**

The Information System for Research in Primary Care (SIDIAP)

Integrated Primary Care Information (IPCI)

Clinical Practice Research Datalink (CPRD) GOLD

IQVIA Disease Analyzer Germany

Estonian Biobank

**Data sources (types)**

Electronic healthcare records (EHR)

Other

## Use of a Common Data Model (CDM)

**CDM mapping**

Yes

**CDM Mappings**

**CDM name**

OMOP

**CDM website**

https://www.ohdsi.org/Data-standardization/

## Data quality specifications

**Check conformance**

Unknown

**Check completeness**

Unknown

**Check stability**

Unknown

**Check logical consistency**

Unknown

# Data characterisation

**Data characterisation conducted**

No