Association between COVID-19 vaccines and paediatric safety outcomes in children and adolescents aged 5-19 years in the Nordic countries: Myocarditis, pericarditis and thromboembolic events

First published: 04/10/2022

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Study Finalised

Administrative details

EU PAS number

EUPAS48979

Study ID

50201

DARWIN EU® study

No

Study countries

☐ Denmark

☐ Finland

Norway

Sweden

Study status

Finalised

Research institutions and networks

Institutions

Data Analytic Center (DAC), Danish Medicine Agency

Denmark

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Institution | **EU Institution/Body/Agency** | **ENCePP partner**

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Primary lead investigator

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Primary lead investigator

Study timelines

Date when funding contract was signed
Planned: 03/08/2022

Actual: 03/08/2022

Study start date
Planned: 03/08/2022

Actual: 03/08/2022

Data analysis start date
Planned: 01/10/2022

Actual: 01/10/2022

Date of final study report
Planned: 03/10/2022

Actual: 03/10/2022

Sources of funding

- EMA

Study protocol

EMACVS_STUDYPROTOCOL031022.pdf(1.39 MB)

EMACVS_STUDYPROTOCOL_I_071122.pdf(1022.51 KB)

Regulatory

Was the study required by a regulatory body?

Yes

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

Not applicable

Methodological aspects

Study type

Study type list

Study topic:

Disease /health condition

Study type:

Non-interventional study

Scope of the study:

Assessment of risk minimisation measure implementation or effectiveness

Data collection methods:

Secondary use of data

Main study objective:

The overall aim of this project is to conduct nationwide cohort studies of current COVID-19 vaccine safety issues in children/adolescents. The aim of this project also is to conduct a feasibility study of the possible association between COVID-

19 vaccination in children and adolescents and a wide range of immune-mediated conditions.

Study Design

Non-interventional study design

Cohort

Other

Non-interventional study design, other

Nationwide register-based study

Study drug and medical condition

Medical condition to be studied

COVID-19

COVID-19 immunisation

Population studied

Short description of the study population

Subjects aged 5-19 years identified from the four larger Nordic countries (Denmark, Finland, Norway, and Sweden) for the study period of 1 January 2021 to 31 October 2022.

Age groups

Children (2 to < 12 years)

Adolescents (12 to < 18 years)

Adults (18 to < 46 years)

Special population of interest

Other

Special population of interest, other

COVID-19 patients

Estimated number of subjects

4200000

Study design details

Outcomes

To evaluate the association between COVID-19 vaccines and myocarditis/pericarditis, and thromboembolic and thrombocytopenic outcomes in children/adolescents aged 5 to 19 years. To conduct a feasibility study on the association between COVID-19 vaccination and 47 different immune-mediated diseases including autoimmune hepatitis and type 1 diabetes in children/adolescents aged 5 to 19 years. To evaluate the association between COVID-19 infection and myocarditis/pericarditis and thromboembolic and thrombocytopenic outcomes in children/adolescents aged 5 to 19 years. To evaluate the association between COVID-19 infection and 47 different immune-mediated diseases in children/adolescents aged 5 to 19 years.

Data analysis plan

Nationwide register-based cohort studies in Denmark, Finland, Norway and Sweden. We will analyse the follow-up periods and outcome counts using three complementary survival analysis approaches, 1) observed vs expected analyses

providing standardized morbidity ratios and risk differences, 2) contemporary cohort analyses providing adjusted rate ratios and excess risk, and 3) self-controlled case series analyses nested in the cohorts providing rate ratios and excess risk, which are by design unconfounded by time-independent covariates. We will include an adjustment age, sex, year and calendar month, country-specific region, maternal country of birth (Nordic, Western, non-Western), comorbidities and vaccination priority group.

Documents

Study results

EMACVS_ROC09_STUDYREPORT_I_revision_160223_clean.pdf(3.11 MB)

Study report

EMACVS_ROC09_STUDY_REPORT_II_29042023.pdf(1.88 MB)

Study, other information

EMA_CSV_STUDYPROTOCOL_II_131222_revision.pdf(1.02 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)

Danish registries (access/analysis)

Clinical Practice Research Datalink

Data source(s), other

Multiple nationwide dmeography and health care registries Finland, Multiple nationwide dmeography and health care registries Sweden, Multiple nationwide dmeography and health care registries Norway

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Data sources (types)

Administrative healthcare records (e.g., claims)

Drug dispensing/prescription data

Electronic healthcare records (EHR)

Other

Data sources (types), other

Prospective patient-based data collection

Use of a Common Data Model (CDM)

CDM mapping

No

Data quality specifications

Check conformance

Unknown

Check completeness

Unknown

Check stability

Unknown

Check logical consistency

Unknown

Data characterisation

Data characterisation conducted

No