Novel statistics to handle rare diseases and small sample sizes using Bayesian techniques: Application to Multiple Sclerosis (MS) and Systemic Lupus Erythematosus (SLE) in pregnancy

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# Administrative details

EU PAS number		
EUPAS43420		
Study ID		
43421		
DARWIN EU® study		
No		
Study countries		
Finland		
France		

Gern	nany		
Italy			
Norw	ay		
Spair	า		

#### Study description

The aim of the study is to evaluate the safety to the mother and child of medications that are used by women suffering from SLE or MS during pregnancy using novel statistical methods. The ConcePTION platform will be used to analyse observational data from multinational cohort studies based on population based secondary data sources in Europe. The following studies will be undertaken: a. Identification of the most appropriate algorithm to identify MS and SLE in women of child bearing age and childhood infections in children in selected data sources on the ConcePTION platform. b. Evaluation of the utilisation trends and patterns of medications in women with SLE and MS (a) of childbearing age and (b) in pregnant women before, during and after pregnancy c. Evaluation of the safety to the mother and child of medications that are used by women suffering from SLE or MS during pregnancy. Analytic results from each data sources will be combined using novel meta-analytic techniques to overcome the issue of small numbers that will occur due to rare exposures and outcomes being studied. d. Evaluation of the increased risk of the occurrence of a major congenital malformation associated with first trimester exposure to medications that are used by women suffering from SLE or MS during pregnancy. EUROmediCAT data will be used to perform case-malformed analyses and to compile case series of congenital anomaly cases to identify possible safety indications.

#### **Study status**

Ongoing

Research institutions and networks

## **Institutions**

## CHU de Toulouse - Hôpital des Enfants

First published: 01/02/2024

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

Institution



# Drugs and Pregnancy, Finnish Institute for Health and Welfare (THL) Finland First published: 17/03/2010 Last updated: 20/03/2024 Institution Educational Institution Laboratory/Research/Testing facility ENCePP partner

Ulster University  United Kingdom (Northern Ireland)  First published: 01/02/2024  Last updated: 20/03/2024  Institution  Educational Institution
University of Bordeaux  France  First published: 01/02/2024  Last updated: 01/02/2024  Institution  Educational Institution
The Foundation for the Promotion of Health and Biomedical Research of Valencia Region (FISABIO)  ☐ Spain
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Institution

University of Swansea Wales, UK, University of Ferrara Emilia Romagna, Italy, Ulster University North Ireland, UK, Institute for prevention Research and epidemiology Leipniz, Germany, University of Bordeaux France, The Foundation for the Promotion of Health and Biomedical Research of Valencian Region Spain

## **Networks**

## **ConcepTION**

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Network

## Contact details

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Study contact

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## **Primary lead investigator**

## Christine Damase-Michel

**Primary lead investigator** 

# Study timelines

#### Date when funding contract was signed

Planned: 01/04/2021

Actual: 01/04/2021

## Study start date

Actual: 08/05/2020

## Date of final study report

Planned: 31/03/2024

# Sources of funding

• EU institutional research programme

## More details on funding

**IMI ConcePTION** 

# Regulatory

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

No

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

Not applicable

# Methodological aspects

# Study type

# Study type list

#### **Study type:**

Non-interventional study

## Scope of the study:

Assessment of risk minimisation measure implementation or effectiveness

Disease epidemiology

Drug utilisation

## Main study objective:

The ultimate aim of the study is to use novel methods of analysis concerning the synthesis of information from disparate data sources to provide data about medications that are used by women suffering from rare diseases such as SLE or MS, on their safety in pregnancy to the mother and child.

# Study Design

#### Non-interventional study design

Case-control

Cohort

# Study drug and medical condition

#### Medical condition to be studied

Multiple sclerosis

# Population studied

#### **Age groups**

Adolescents (12 to < 18 years)

Adults (18 to < 46 years)

Adults (46 to < 65 years)

## Special population of interest

Pregnant women

#### **Estimated number of subjects**

5989000

## Study design details

#### **Outcomes**

Major congenital malformations -, Maternal : - Preeclampsia -Gestational diabetes Pregnancy : • Still birth • Spontaneous abortions • Live births •
 Elective terminations • Ectopic pregnancy Birth/Neonatal : • SGA • LGA •

Malformations split by organ system • Pre-term birth • Neonatal stroke • Neonatal death • Neonatal infections Children : - Death - Infections

#### Data analysis plan

-Algorithm Identification: Validity judged by consistency of estimated prevalence rates within registries across time and by comparison with published prevalence rates. -Utilisation study: Prevalence of MS and SLE drug utilisation compared between pregnant women and matched non-pregnant women using conditional logistic regression. -Safety study: Medication safety analysed by comparing women with SLE or MS who are exposed to a specific medication with women with SLE or MS who are unexposed. In addition, comparaison to women without either MS or SLE to estimate the association of each disease with adverse pregnancy outcomes. Unadjusted logistic regression models, then a range of adjusted models will be run to account for confounders and effect modifiers. Analytic results from each data sources will be combined using novel meta-analytic techniques to overcome any issues of small numbers occurring. - EUROmediCAT study: Case-malformed analyses(logistic regression)

## 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)

**EFEMERIS** 

German Pharmacoepidemiological Research Database

ARS Toscana

EUROmediCAT central database

#### Data source(s), other

Emilia Romagna GPs drug prescription, EFEMERIS, Drugs and Pregnancy Finland, GePaRD, ARS, EUROmediCAT

#### Data sources (types)

Administrative healthcare records (e.g., claims)

Drug dispensing/prescription data

Other

#### Data sources (types), other

Exposure registry

# 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