Similarity-based approaches to identifying risk of future asthma attack using UK primary care data

First published: 22/04/2021

Last updated: 22/04/2021

Study Planned

Administrative details

EU PAS number

EUPAS36059

Study ID

36060

DARWIN EU® study

No

Study countries

United Kingdom

Study description

Our aim is to investigate similarity-based approaches to identify the risk of a patient having an asthma attack in the 1 year following an asthma review appointment in primary care. We will use primary care electronic health records to derive this model. The two similarity-based approaches that we will investigate are a neighbourhood approach (i.e. identifying the patients who are most similar to the patient of interest and training the model only on these patients) and a cluster approach (i.e. identifying groups of similar patients via cluster analysis and training a separate model for each group). The variables that we will use to quantify similarity and derive the risk score will be chosen based on similar risk-prediction studies in asthma.

Study status

Planned

Research institutions and networks

Institutions

University of Edinburgh (UofE)

United Kingdom

First published: 23/11/2018

Last updated: 16/12/2024

Institution | **Educational Institution** | **Hospital/Clinic/Other health care facility** | **ENCePP partner**

Networks

Optimum Patient Care (OPC) Network

United Kingdom (Northern Ireland)

First published: 26/09/2015

Last updated: 16/06/2025

Network | ENCePP partner

Asthma UK Centre for Applied Research

Contact details

Study institution contact

Elspeth Horne elsie.horne@ed.ac.uk

Study contact

elsie.horne@ed.ac.uk

Primary lead investigator

Aziz Sheikh

Primary lead investigator

Study timelines

Date when funding contract was signed

Planned: 18/08/2020

Study start date
Planned: 18/08/2020

Data analysis start date
Planned: 18/08/2020

Date of interim report, if expected
Planned: 30/06/2021

Date of final study report
Planned: 31/12/2021

Sources of funding

- Other

More details on funding

MRC (via PhD studentship)

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:

Disease epidemiology

Main study objective:

To investigate similarity-based approaches to identifying the risk of asthma attack in the year following an asthma review appointment in primary care.

Study Design

Non-interventional study design

Cohort

Study drug and medical condition

Medical condition to be studied

Asthma

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)

Estimated number of subjects

500.000

Study design details

Outcomes

risk of asthma attack in following 1 year

Data analysis plan

The primary analysis will be carried out using data from OPCRD. The approach used in OPCRD will be externally validated using data from the SAIL databank. Methods of analysis are summarise below: Traditional approach: We will use methods such as logistic regression to derive a score corresponding to the risk of asthma attack in the following year. Similarity-based approaches: We will use metrics such as the Euclidean distance to quantify the similarity between patients. We will then use this metric to identify a subsample using both a neighbourhood approach (i.e. all patients within a specified similarity threshold) and a cluster approach (i.e. identify subsamples using cluster analysis). We will use methods such as logistic regression to derive a risk prediction model from the identified subsample.

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.

Conflicts of interest of investigators

ENCePP_COI_EUPAS36059.pdf (64.99 KB)

Composition of steering group and observers

EUPAS36059-40675.pdf (26.03 KB)

Data sources

Data source(s)

Optimum Patient Care Research Database

SAIL Databank

Data source(s), other

Optimum Patient Care Research Database (OPCRD), SAIL databank

Data sources (types)

Electronic healthcare records (EHR)

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