Historical matched-cohort study assessing whether the use of inhaled corticosteroids shortens time to first diagnosis or accelerates the progression of side effects compared to non-ICS therapies in patients with Chronic Obstructive Pulmonary Disease. (ICS use in COPD patients and risk of side effects)

First published: 19/04/2016

Last updated: 01/04/2024

Study Finalised

Administrative details

EU PAS number

EUPAS13218

Study ID

27572

DARWIN EU® study

No

Study countries

United Kingdom

Study description

The objective is to analyze the relationship between ICS use and Type 2 Diabetes onset, Type 2 Diabetes worsening disease control and disease progression, osteoporosis onset, pneumonia incidence and overuse of ICS. Firstly, these endpoints will be compared between an ICS therapy cohort and non-ICS therapy cohort. Subsequently, they will be analyzed within the ICS-therapy cohort only and compared by ICS average daily dose, ICS cumulative dose, and ICS drug and inhaler device type. This is a historical, matched-cohort study. The study time period is 1990 - present. To account for changes in ICS prescribing in the study period, patients will be matched on index date to ensure they follow a similar time path. For both treatment cohorts a 1-year baseline period prior to the date of first prescription of ICS therapy or first/additional prescription of non-ICS therapy (i.e. the index date) will be followed by a minimum 1-year outcome period. All of the patient’s available data post index date will be utilized.To be included in the ICS cohort, patients may switch between different types of ICS in the outcome period as long as ICS remain part of therapy. Exposure of ICS will be measured from the index date to realization of the outcome (e.g. a Type 2 Diabetes diagnosis) or from index date to the end of the follow up period if the outcome does not occur. A variable will be created, exposure time, to be used as an adjustment in all multivariable analyses. To be included in the non-ICS cohort, patients may be prescribed SABA, LABA, SAMA, LAMA, Methylxanthines and/or compound bronchodilator preparations and may switch between therapies in the outcome period as long as ICS are not prescribed. The number of OCS prescriptions per year of the outcome period and overall prescriptions in the outcome period will be

accounted for in the analysis.

Study status

Finalised

Research institutions and networks

Institutions

Observational & Pragmatic Research Institute Pte (OPRI)

United Kingdom

First published: 06/10/2015

Last updated: 20/08/2026

Institution | **Educational Institution** | **Laboratory/Research/Testing facility** | **ENCePP partner**

Contact details

Study institution contact

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Study contact

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Primary lead investigator

David Price

Primary lead investigator

Study timelines

Date when funding contract was signed
Actual: 01/12/2015

Study start date
Planned: 01/05/2016

Actual: 14/07/2016

Data analysis start date
Planned: 26/06/2016

Date of final study report
Planned: 12/04/2017

Actual: 10/07/2017

Sources of funding

- Pharmaceutical company and other private sector

More details on funding

Novartis

Study protocol

ICS use in COPD patients and risk of side effects_ENCEPP registration April 2016.pdf (580.56 KB)

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 topic:

Disease /health condition

Human medicinal product

Study type:

Non-interventional study

Scope of the study:

Assessment of risk minimisation measure implementation or effectiveness

Drug utilisation

Data collection methods:

Secondary use of data

Main study objective:

The objective is to analyze the relationship between ICS use and Type 2 Diabetes onset, Type 2 Diabetes worsening disease control and disease progression, osteoporosis onset, pneumonia incidence and overuse of ICS.

Study Design

Non-interventional study design

Cohort

Study drug and medical condition

Anatomical Therapeutic Chemical (ATC) code

(C05AA) Corticosteroids

Corticosteroids

Medical condition to be studied

Chronic obstructive pulmonary disease

Type 2 diabetes mellitus

Osteoporosis

Pneumonia

Population studied

Short description of the study population

Patients with Chronic Obstructive Pulmonary Disease who were prescrived with Inhaled corticosteroids (ICS) or non-ICS therapies.

Patients with following criteria were included:

1. Age ≥ 40 years at index date

2. 2 years of continuous practice records, 1 year prior to index date and 1 year post index date

3. ≥ 2 respiratory medication prescriptions per year of enrollment in the study

- ICS cohort: ≥ 2 ICS prescriptions per year4

- Non-ICS cohort: ≥ 2 of any of the following per year: SABA, LABA, SAMA, LAMA, Methylxanthines and/or compound bronchodilator preparations

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Age groups

- Adults (46 to < 65 years)
- Adults (65 to < 75 years)
- Adults (75 to < 85 years)
- Adults (85 years and over)

Special population of interest

Other

Special population of interest, other

Chronic Obstructive Pulmonary Disease (COPD) patients

Estimated number of subjects

100.000

Study design details

Outcomes

The primary objective of the study is to evaluate whether ICS therapy is associated with an increased onset, shortened time to first diagnosis or

accelerated progression of Type 2 Diabetes compared to non-ICS therapies. - To evaluate whether ICS are associated with an increased onset or shortened time to first diagnosis of osteoporosis or increased incidence of pneumonia compared to non-ICS therapies.- To evaluate the effects of average daily ICS dose, cumulative dose of ICS, ICS drug and inhaler device type on the aforementioned conditions.- To measure overuse of ICS in COPD patients according to guidelines.

Data analysis plan

Summary statistics will be produced for unmatched and matched data for all baseline variables by group. Time to event outcomes will be analyzed using multivariable Cox proportional hazards models, reporting hazard ratios with 95% confidence intervals. Continuous progression outcomes will be analyzed using paired t-tests and generalized estimating equations reporting mean changes with 95% confidence intervals. Count outcomes will be analyzed using conditional Poisson regression, reporting incidence rate ratios with 95% confidence intervals.

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)

Clinical Practice Research Datalink

Healthcare Emergency Information System

Optimum Patient Care Research Database

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

Unknown