Impact of regulatory interventions to restrict the combined use of renin-angiotensin system-acting agents in Denmark: interrupted time series analysis

First published: 22/12/2020

Last updated: 11/01/2022

Study Finalised

Administrative details

EU PAS number

EUPAS38752

Study ID

45122

DARWIN EU® study

No

Study countries

Denmark

Study description

Through a referral procedure in 2014, the European Medicines Agency recommended risk minimisation measures, including restrictions on the combined use of RAS-acting agents. The primary objective of this study was to assess the impact of the EMA referral on the co-prescribing of RAS-acting agents in Denmark by examining the trends in co-dispensing of Angiotensin-converting enzyme inhibitors (ACEis) and Angiotensin II receptor blockers (ARBs). A secondary objective was to describe the population in terms of demographics (age and sex) co-prescribed an ACEi and an ARB over time. The study included nationwide secondary data from the National Prescription Registry (NPR) covering all prescriptions dispensed by community pharmacies in Denmark from 2008 through 2018.

Study status

Finalised

Research institutions and networks

Institutions

Data Analytic Center (DAC), Danish Medicine Agency

Denmark

First published: 17/04/2023

Last updated: 17/04/2023

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

Contact details

Study institution contact

Per Sindahl pesi@dkma.dk

Study contact

pesi@dkma.dk

Primary lead investigator

Per Sindahl

Primary lead investigator

Study timelines

Date when funding contract was signed

Planned: 01/01/1900

Actual: 01/01/1900

Study start date

Planned: 01/01/1900

Actual: 01/01/1900

Date of final study report

Planned: 01/06/2021

Actual: 01/06/2020

Sources of funding

- Other

More details on funding

Copenhagen Center of Regulatory Science

Study protocol

DUS of RAS-acting agents .pdf (377.41 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:

Other

Study topic, other:

Disease/Epidemiology study

Study type:

Non-interventional study

Scope of the study:

Drug utilisation

Effectiveness study (incl. comparative)

Data collection methods:

Secondary use of data

Main study objective:

The primary objective of this study was to assess the impact of the EMA referral procedure on the co-prescribing of RAS-acting agents by examining the trends in co-dispensing of angiotensin-converting enzyme inhibitor (ACEis) and angiotensin II receptor blocker (ARBs) in Denmark.

Study Design

Non-interventional study design

Other

Non-interventional study design, other

Descriptive analysis of the whole Danish population

Population studied

Short description of the study population

The source population was derived from the population of Denmark (~5.8 million): those who picked up a prescription for an ARB or ACEi from a community pharmacy between 1 January 2008 and 31 December 2018 and were ≥18 years old.

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

400

Study design details

Outcomes

Monthly prevalence of patients co-dispensed an angiotensin-converting enzyme inhibitor (ACEis) and angiotensin II receptor blocker (ARBs) on the same day per 1,000,000 population, A secondary objective of this study was to describe the population in terms of demographics (age and sex) co-prescribed an angiotensin-converting enzyme inhibitor and an angiotensin II receptor blocker over time.

Data analysis plan

We used autoregressive integrated moving average (ARIMA) interrupted time series regression model as outlined by the Cochrane Effective Practice and Organisation of Care (EPOC) to evaluate the change in dispensing trends from pre-intervention to post-intervention. A linear regression model of the monthly

prevalence of co-medication of ACEis and ARBs was used. We used 24 data points before and 24 data points after the intervention and aimed for a minimum of 100 observations at each data point.

Documents

Study results

Impact of regulatory interventions to restrict the combined use of renin-angiotensin system blockers.pdf (574.59 KB)

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 sources (types)

Drug dispensing/prescription data

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