Real-world Comparative Effectiveness of Evolocumab Versus Ezetimibe in Reducing the Risk of Fatal and Nonfatal Myocardial Infarction (20240027)

First published: 26/03/2025

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Study Ongoing

Administrative details

EU PAS number

EUPAS1000000522

Study ID

1000000522

DARWIN EU® study

No

Study countries

United States

Study description

This study is to compare treatment effectiveness of evolocumab vs. ezetimibe in reducing risk of fatal and nonfatal myocardial infarction among patients with atherosclerotic cardiovascular disease.
It is a retrospective secondary database analysis using a large, US claims dataset.

Study status

Ongoing

Research institutions and networks

Institutions

It is an Amgen sponsored study in collaboration with Target RWE

Contact details

Study institution contact

Global Development Leader Amgen Inc.

medinfo@amgen.com

Study contact

medinfo@amgen.com

Primary lead investigator

Global Development Leader Amgen Inc.

Primary lead investigator

Study timelines

Date when funding contract was signed
Planned: 28/02/2024

Actual: 28/02/2024

Study start date
Planned: 01/04/2025

Actual: 01/04/2025

Data analysis start date
Planned: 15/04/2025

Date of final study report
Planned: 31/03/2026

Sources of funding

More details on funding

Amgen Inc.

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 topic:

Human medicinal product

Study type:

Non-interventional study

Scope of the study:

Effectiveness study (incl. comparative)

Study design:

It is an observational retrospective cohort study to compare treatment effectiveness of evolocumab vs. ezetimibe in reducing risk of fatal and nonfatal myocardial infarction in US adult patients with ASCVD.

Main study objective:

The primary objectives of this study are to describe weighted and unweighted baseline demographic and clinical characteristics among new users of evolocumab or ezetimibe, utilize a staged approach to assess the sample size, comparability, and potential uncontrolled confounding between the new users of evolocumab or ezetimibe using negative control outcomes (NCOs), and compare the risk of fatal and nonfatal myocardial infarction (MI) between the new users of evolocumab and ezetimibe.

Study Design

Non-interventional study design

Other

Non-interventional study design, other

Observational retrospective cohort study

Study drug and medical condition

Medicinal product name

REPATHA

Study drug International non-proprietary name (INN) or common name

EVOLOCUMAB

Anatomical Therapeutic Chemical (ATC) code

(C10AX13) evolocumab

evolocumab

Medical condition to be studied

Myocardial infarction

Population studied

Short description of the study population

Adult patients with ASCVD who were new users of evolocumab or ezetimibe

Estimated number of subjects

423556

Study design details

Setting

The study cohort will be drawn from Komodo’s Healthcare Map and will consist of U.S. adults (aged ≥18 years at initiation of evolocumab or ezetimibe) with documented history of ASCVD and statin use, who were new users of evolocumab or ezetimibe (no prior use of PSCK9i, ezetimibe, or bempedoic acid)

between 01 January 2017 and 31 December 2023.
Patients will be followed up to compare effectiveness of treatment with evolocumab vs. ezetimibe in reducing risk of fatal and nonfatal MI.

Comparators

New users of evocolumab vs. new users of ezetimibe

Outcomes

Risk of fatal and nonfatal MI using cumulative risk, risk difference, and risk ratio

Data analysis plan

Primary Objective 1
Descriptive analyses will be conducted to assess weighted and unweighted baseline participant demographic characteristics, clinical history and medication use for evolocumab and ezetimibe cohorts.
Comparability of the evolocumab and ezetimibe cohorts will be assessed by calculating standardized mean differences of variables included in the propensity-score model, and assessing the distributions and amount of overlap in propensity scores for the two treatment groups.
Primary Objective 2
2, 3 and 4-year cumulative incidences, risk differences (RD) and risk ratios (RR) and their 95% confidence intervals will be estimated for each NCO comparing the evolocumab cohort with the ezetimibe cohort. Inverse probability of treatment and censoring weights will be used to account for confounding at baseline and potentially informative censoring.
Deaths will be included as competing events for analyses of individual NCOs. A table will be created of outcome frequencies within each treatment cohort. If NCO analyses indicate acceptable levels of residual bias and there is sufficient sample size to detect clinically meaningful differences in outcomes Primary

Objective 3 will go ahead.
If NCO analyses indicate that confounding is not adequately controlled the inclusion/exclusion criteria and propensity score models will be re-evaluated to address remaining bias until an acceptable threshold is met.
Primary Objective 3
Plots will be created of the 2, 3 or 4-year cumulative incidences of fatal and nonfatal MI outcomes in the population overall and within each treatment cohort.
RDs and RRs and their 95% confidence intervals for fatal and nonfatal MI will be estimated comparing the evolocumab cohort with the ezetimibe cohort.
Inverse probability of treatment and censoring weights will be utilized to account for confounding at baseline and potentially informative censoring.
Deaths attributed to causes other than MI will be included as competing events.

Summary results

Not available

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)

Other data source

Data source(s), other

Komodo Health claims data.

Data sources (types)

Administrative healthcare records (e.g., claims)

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