Association between renin-angiotensin-aldosterone system (RAAS) inhibitors and severe outcomes among patients exposed with SARS-COV2: a retrospective analysis using administrative databases in North Italy (COVID-19) (RAAS-COVID19-BG-BS)

First published: 15/04/2020

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Study Planned

Administrative details

EU PAS number

EUPAS34714

Study ID

43397

DARWIN EU® study

No

Study countries

Italy

Study description

The increased mortality and morbidity of COVID-19 in patients with hypertension is an association that has been observed in a number of initial epidemiological studies. From these evidence, it has emerged the hypothesis that angiotensin-converting enzyme (ACE) inhibitors (ACE-Is) could act as a potential risk factor for fatal Corona virus disease 2019 (COVID-19) by up-regulating ACE2. Because of the insufficient evidence to determine how to appropriately manage hypertension in the setting of COVID-19, there is an opportunity for the research community to better outline the role of ACE2 in the pathogenesis of COVID-19, while clinical and epidemiological data are needed to determine if there is an association between the use of ACE-Is, ARBs, or both and COVID-19 mortality and morbidity. The study aims to investigate the association between use of RAAS inhibitors and severe outcomes (i.e. death, admission in ICU) among hospitalised patients with confirmed COVID-19. The study will be conducted using data of healthcare administrative databases from two Local Health Authorities in Lombardy (the Italian region mostly hit by the epidemic) currently covering a patient population of around 2.3 million residents. A registry containing information on confirmed COVID-19 cases will be linked with the administrative databases. RAAS inhibitors use will be defined on the basis on reimbursement history. Standard prospective analyses will be conducted to address the study objectives.

Study status

Planned

Research institutions and networks

Institutions

University of Milano Bicocca

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Institution

Local Health Authority BG Bergamo (Italy), Local Health Authority BS Brescia (Italy), I.R.C.S.S. Multimedica Sesto S. Giovanni (Milan - Italy)

Contact details

Study institution contact

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Study contact

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Primary lead investigator

Giampiero Mazzaglia

Primary lead investigator

Study timelines

Date when funding contract was signed
Planned: 07/04/2020

Study start date
Planned: 31/07/2020

Date of final study report
Planned: 16/01/2022

Sources of funding

- Other

More details on funding

Each center will make available PTE with no funding

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

Main study objective:

The primary aim of this analysis is to investigate the association between use of RAAS inhibitors and severe outcomes (i.e. death, admission in ICU) among hospitalized patients with confirmed COVID-19.

Study Design

Non-interventional study design

Cohort

Study drug and medical condition

Anatomical Therapeutic Chemical (ATC) code

(C09) AGENTS ACTING ON THE RENIN-ANGIOTENSIN SYSTEM

AGENTS ACTING ON THE RENIN-ANGIOTENSIN SYSTEM

(C09A) ACE INHIBITORS, PLAIN

ACE INHIBITORS, PLAIN

(C09B) ACE INHIBITORS, COMBINATIONS

ACE INHIBITORS, COMBINATIONS

(C09C) ANGIOTENSIN II RECEPTOR BLOCKERS (ARBs), PLAIN

ANGIOTENSIN II RECEPTOR BLOCKERS (ARBs), PLAIN

(C09DX) Angiotensin II receptor blockers (ARBs), other combinations

Angiotensin II receptor blockers (ARBs), other combinations

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

15000

Study design details

Outcomes

Death, admission in ICU, Demographic and clinical characteristics (including drug exposure patterns) on patients population by study outcomes

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Data analysis plan

Descriptive statistics, standard cumulative hazard estimates, and multivariate Cox proportional hazards regression analyses.

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)

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