CVD-COVID-UK/COVID-IMPACT Research Outputs

The papers and preprints listed below have been produced on behalf of the CVD-COVID-UK/COVID-IMPACT Consortium, supported by the BHF Data Science Centre.

In line with the consortium's principles - based on a collaborative, transparent and inclusive ethos - all related analysis plans, protocols, code, phenotype code lists and reports are made publicly available via the centre's collection on the HDR UK Gateway, repositories in the centre's GitHub organisation and through open-access publications (via the links below).

Published papers/reports and preprints

January 2026

Title:	**Prevalence of 406 rare diseases by ethnicity and their associated COVID-19 infection burden: A national cross-sectional study of 62.5 million people in England**. *medRxiv*
Project:	CCU069_01: RARE-CVD-COVID: To understand COVID-19 impact on intersectional disparity in rare v common cardiometabolic diseases: cardiovascular diseases (CVD) and metabolic diseases (MBD) including diabetes.
DOI:	https://doi.org/10.64898/2026.01.13.26344068
GitHub:	https://github.com/BHFDSC/CCU069_01

December 2025

Title:	**Measurement of quality of stroke care with national electronic health records: a cohort during and after the COVID-19 pandemic**. *medRxiv*
Project:	CCU005_08: Assessing the impact of the COVID-19 pandemic on the accuracy, completeness and agreement of stroke cases across a national registry and whole population electronic health records
DOI:	https://doi.org/10.64898/2025.12.03.25340732
GitHub:	https://github.com/BHFDSC/CCU005_08

November 2025

Title:	**Mental disorders, receipt of acute cardiac care following myocardial infarction and the impact of the COVID-19 pandemic: a cohort study**. *medRxiv*
Project:	CCU046_01: Severe mental illness and receipt of acute cardiac care following myocardial infarction
DOI:	https://doi.org/10.1101/2025.11.21.25340556
GitHub:	https://github.com/BHFDSC/CCU046_01

Title:	**Mental disorders, mortality following myocardial infarction and the impact of the COVID-19 pandemic in England: a cohort study**. *medRxiv*
Project:	CCU046_02: Mental illness and mortality following myocardial infarction
DOI:	https://doi.org/10.1101/2025.11.21.25340653
GitHub:	https://github.com/BHFDSC/CCU046_02

November 2025

Title:	**Short-term and lifetime prediction of heart failure hospitalisation and cardiovascular mortality in patients with heart failure with preserved ejection fraction: the LIFE-Preserved model**. *European Heart Journal.*
Project:	CCU004_05: Validation of the LIFE-Preserved model, a personalized lifetime prediction of survival and treatment benefit in patients with heart failure with preserved ejection fraction during and after the Covid-19 pandemic.
DOI:	https://doi.org/10.1093/eurheartj/ehaf784.3496
GitHub:	https://github.com/BHFDSC/CCU004_05

Title:	**Vascular and inflammatory diseases after COVID-19 infection and vaccination in children and young people in England: a retrospective, population-based cohort study using linked electronic health records**. *The Lancet Child & Adolescent Health*
Project:	CCU002_07: COVID-19 infection and vaccination and the risks of inflammatory and vascular events in individuals aged under 18 years old
DOI:	https://doi.org/10.1016/S2352-4642(25)00247-0
GitHub:	https://github.com/BHFDSC/CCU002_07

October 2025

Title:	**Burden of cardiovascular diseases in England (2020–24): a national cohort using electronic health records data**. *The Lancet Public Health*
Project:	CCU072_01: Influence of COVID-19 on British burden of cardiovascular disease
DOI:	https://doi.org/10.1016/S2468-2667(25)00163-X
GitHub:	https://github.com/BHFDSC/CCU072_01

Title:	**Impact of the COVID-19 pandemic on incidence of myocardial infarction, heart failure and stroke, by mental disorder diagnosis, in England, 2019–2023: a cohort study**. *Open Heart*
Project:	CCU046_03: Severe mental illness and incidence of heart attack, heart failure and stroke
DOI:	https://doi.org/10.1136/openhrt-2025-003398
GitHub:	https://github.com/BHFDSC/CCU046_03

July 2025

Title:	**Cardiac surgery during and after the pandemic: a retrospective analysis of UK trends and outcomes**. *European Journal of Cardio-Thoracic Surgery*
Project:	CCU007_05: Are there differences in case mix, surgical priority, incidence of mortality and complications (both in-hospital and in the long-term) after adult cardiac surgery during pre-lockdown and lockdown periods?
DOI:	https://doi.org/10.1093/ejcts/ezaf246
GitHub:	https://github.com/BHFDSC/CCU007_05

Title:	**The challenges of replication: a worked example of methods reproducibility using electronic health record data**. *PLOS One*
Project:	CCU040_02: The challenges of replication: a worked example of methods reproducibility using routinely collected healthcare data
DOI:	https://doi.org/10.1371/journal.pone.0326335
GitHub:	https://github.com/BHFDSC/CCU040_01

July 2025

Title:	**Pre-pregnancy primary care and accident and emergency interactions among interpreter-users versus non-interpreter-users: a retrospective cohort study**. *medRxiv*
Project:	CCU063_03: The effect of COVID-19 on preconception health among individuals who require an interpreter in England
DOI:	https://doi.org/10.1101/2025.07.03.25330826
GitHub:	https://github.com/BHFDSC/CCU063_03

Title:	**Ethnic disparities in COVID-19 mortality and cardiovascular disease in England and Wales between 2020-2022**. *Nature Communications*
Project:	CCU037_02: Ethnic disparities in health: a population-wide analysis of digital health records for mortality and cardiovascular risk in individuals diagnosed with COVID-19
DOI:	https://doi.org/10.1038/s41467-025-59951-4
GitHub:	https://github.com/BHFDSC/CCU037_02

Title:	**Characteristics and early diagnosis of Motor Neuron Disease (MND) in 67 million individuals in England: a comparative study on phenotyping models derived by AI, Knowledge Graphs and the MND Association**. *medRxiv*
Project:	CCU019_03a: Characteristics and early diagnosis of Motor Neuron Disease (MND) in 67 million individuals in England: a comparative study on phenotyping models derived by AI, Knowledge Graphs and the MND Association
DOI:	https://doi.org/10.1101/2025.07.01.25330428
GitHub:	https://github.com/BHFDSC/CCU019_03a

May 2025

Title:	**A population-based cross-sectional investigation of COVID-19 hospitalizations and mortality among autistic people**. *Journal of Autism and Developmental Disorders*
Project:	CCU030_02: COVID-19 hospitalisations and mortality in autistic people: a whole-country population study
DOI:	https://doi.org/10.1007/s10803-025-06844-6
GitHub:	https://github.com/BHFDSC/CCU030_02

Title:	**Making a case for an autism-specific multimorbidity index: a comparative cohort study**. *Journal of Autism and Developmental Disorders*
Project:	CCU030_03: Making a case for an autism-specific bespoke multimorbidity index: a COVID-19 pilot study
DOI:	https://doi.org/10.1007/s10803-025-06823-x
GitHub:	https://github.com/BHFDSC/CCU030_03

April 2025

Title:	**Replicating a COVID-19 study in a national England database to assess the generalisability of research with regional electronic health record data**. *BMJ Open*
Project:	CCU040_03: Replicating a regional COVID-19 study in the national UK COVID-IMPACT database
DOI:	https://doi.org/10.1136/bmjopen-2024-093080
GitHub:	https://github.com/BHFDSC/CCU040_01

Title:	**Incidence and prevalence of asthma, chronic obstructive pulmonary disease and interstitial lung disease between 2004 and 2023: harmonised analyses of longitudinal cohorts across England, Wales, South-East Scotland and Northern Ireland**. *Thorax*
Project:	CCU052_01: How does the incidence and prevalence of asthma, ILD, and COPD change from 2019 to the end of 2022?
DOI:	https://doi.org/10.1136/thorax-2024-222699
GitHub:	https://github.com/BHFDSC/CCU052_01

March 2025

Title:	**Impact of COVID-19 pandemic on rates of congenital heart disease procedures among children: prospective cohort analyses of 26 270 procedures in 17 860 children using CVD-COVID-UK consortium record linkage data**. *Open Heart*
Project:	CCU007_01: What are the differences in types of congenital heart disease (CHD) procedures in children during periods of lockdown and relaxation of lockdown, compared to before the COVID-19 pandemic?
DOI:	https://doi.org/10.1136/openhrt-2024-003054
GitHub:	https://github.com/BHFDSC/CCU007_01

February 2025

Title:	**Peripandemic outcomes of infants treated for sentinel congenital heart diseases in England and Wales**. *Open Heart*

Project:	CCU007_03: What are the effects of delays to surgery for CHDs on child's health and wellbeing over the one to two years following the start of the pandemic?
DOI:	https://doi.org/10.1136/openhrt-2024-002964
GitHub:	https://github.com/BHFDSC/CCU007_03

Title:	**Hospital readmission after heart valve surgery in the United Kingdom**. *JTCVS Open*
Project:	CCU007_11: Trend, early and midterm clinical outcomes of cardiac surgical interventions during covid era
DOI:	https://doi.org/10.1016/j.xjon.2025.02.001
GitHub:	https://github.com/BHFDSC/CCU007_11

January 2025

Title:	**Prevalence and demographics of 331 rare diseases and associated COVID-19-related mortality among 58 million individuals: a nationwide retrospective observational study**. *The Lancet Digital Health*
Project:	CCU019_01: Identification and personalised risk prediction for severe COVID-19 in patients with rare disorders impacting cardiovascular health
DOI:	https://doi.org/10.1016/S2589-7500(24)00253-X
GitHub:	https://github.com/BHFDSC/CCU019_01

December 2024

Title:	**Use of sodium valproate and other antiseizure drug treatments in England and Wales: quantitative analysis of nationwide linked electronic health records**. *BMJ Medicine*
Project:	CCU014_03: The impact of the COVID-19 pandemic on use of sodium valproate and implementation of recommendations of the Cumberlege report
DOI:	https://doi.org/10.1136/bmjmed-2023-000760
GitHub:	https://github.com/BHFDSC/CCU014_03

November 2024

Title:	**Healthcare utilisation of 282,080 individuals with long COVID over two years: a multiple matched control, longitudinal cohort analysis**. *Journal of the Royal Society of Medicine*
Project:	CCU049_01: Healthcare utilisation in individuals with Long Covid
DOI:	https://doi.org/10.1177/01410768241288345
GitHub:	https://github.com/BHFDSC/CCU049_01

Title:	**Surgical and transcatheter aortic valve interventions for aortic stenosis in England: sociodemographic variations in treatment trends and outcome over 20 years**. *Heart*

Project:	CCU056_01: Socio-demographic make-up of patients undergoing surgical and transcatheter aortic valve intervention in England and the impact of COVID on this
DOI:	https://doi.org/10.1136/heartjnl-2024-324918
GitHub:	https://github.com/BHFDSC/CCU056_01

Title:	**Routine measurement of cardiometabolic disease risk factors in primary care in England before, during, and after the COVID-19 pandemic: A population-based cohort study**. *PLOS Medicine*
Project:	CCU008_01: The impact of the COVID-19 pandemic on the measurement of routine cardiometabolic disease risk factors in primary care
DOI:	https://doi.org/10.1371/journal.pmed.1004485
GitHub:	https://github.com/BHFDSC/CCU008_01

November 2024

Title:	**Risks of major arterial and venous thrombotic diseases after hospitalisation for influenza, pneumonia, and COVID-19: A population-wide cohort in 2.6 million people in Wales**. *Thrombosis Research*
Project:	CCU002_04: Comparing the long-term risk of stroke/MI in patients after coronavirus infection with other respiratory infections
DOI:	https://doi.org/10.1016/j.thromres.2024.109213
GitHub:	https://github.com/BHFDSC/CCU002_04

Title:	**Combinations of multiple long term conditions and risk of hospital admission or death during winter 2021-22 in England: population based cohort study**. *BMJ Medicine*
Project:	CCU059_01: Combinations of multimorbidity and risk of hospitalisation or death in England during the winter season: a population-based study of 48 million people
DOI:	https://doi.org/10.1136/bmjmed-2024-001016
GitHub:	https://github.com/BHFDSC/CCU059_01

October 2024

Title:	**Contemporary epidemiology of hospitalised heart failure with reduced versus preserved ejection fraction in England: a retrospective, cohort study of whole-population electronic health records**. *The Lancet Public Health*
Project:	CCU045_02: Contemporary trends and impact of multiple long-term conditions in patients with heart failure with reduced and preserved ejection fraction following the onset of the COVID-19 pandemic
DOI:	https://doi.org/10.1016/S2468-2667(24)00215-9
GitHub:	https://github.com/BHFDSC/CCU045_02

Title:	**Association between ethnicity and emergency department visits in the last three months of life in England: a retrospective population-based study using electronic health records**. *BMJ Public Health*

Project:	CCU024_02: Intersectional inequality in emergency department (ED) visits, in-hours and out-of-hours, in the last 3 months of life for people who died in England in 2020
DOI:	https://doi.org/10.1136/bmjph-2024-001121
GitHub:	https://github.com/BHFDSC/CCU024_02

Title:	**Trends in pediatric hospital admissions caused or contributed by SARS-CoV-2 infection in England**. *The Journal of Pediatrics*
Project:	CCU029_02: How do the characteristics of first ascertained SARS-CoV-2 related hospital admissions and the children admitted vary over time related to the pandemic waves of SARS-CoV-2?
DOI:	https://doi.org/10.1016/j.jpeds.2024.114370
GitHub:	https://github.com/BHFDSC/CCU029_02

October 2024

Title:	**The impact of COVID-19 vaccination on patients with congenital heart disease in England: a case-control study**. *Heart*
Project:	CCU068_01: The impact of vaccination on the excess clinical risks of COVID-19 in patients with congenital heart disease
DOI:	https://doi.org/10.1136/heartjnl-2024-324470
GitHub:	https://github.com/BHFDSC/CCU068_01

Title:	**The impact of the COVID-19 pandemic on cardiovascular risk factors and events in England: a population-based cohort study**. *Preprints with The Lancet*
Project:	CCU003_05: 1) To describe the trends in incident diagnoses of hypertension and atrial fibrillation between November 2019 and March 2022 among the adult population of England, overall and in subgroups of interest 2) To estimate the incidence rates of acute myocardial infarction and acute stroke between November 2019 and March 2022 among the adult population of England, overall and in subgroups of interest
DOI:	https://dx.doi.org/10.2139/ssrn.4972808
GitHub:	https://github.com/BHFDSC/CCU003_05

August 2024

Title:	**COVID-19 diagnosis, vaccination during pregnancy, and adverse pregnancy outcomes of 865,654 women in England and Wales: a population-based cohort study**. *The Lancet Regional Health - Europe*
Project:	CCU018_01: Estimating the short- and longer-term risk of cardiovascular disease and intermediate traits in women infected with COVID during pregnancy
DOI:	https://doi.org/10.1016/j.lanepe.2024.101037
GitHub:	https://github.com/BHFDSC/CCU018_01

Title:	**COVID-19 vaccination and birth outcomes of 186,990 women vaccinated before pregnancy: an England-wide cohort study**. *The Lancet Regional Health - Europe*
Project:	CCU036_01: Starting a course of COVID-19 vaccination before pregnancy and future pregnancy outcomes
DOI:	https://doi.org/10.1016/j.lanepe.2024.101025
GitHub:	https://github.com/BHFDSC/CCU036_01

July 2024

Title:	**Cohort study of cardiovascular safety of different COVID-19 vaccination doses among 46 million adults in England**. *Nature Communications*
Project:	CCU002_06: First, second and booster dose COVID-19 vaccination and the risks of arterial and venous vascular events
DOI:	https://doi.org/10.1038/s41467-024-49634-x
GitHub:	https://github.com/BHFDSC/CCU002_06

June 2024

Title:	**Vaccinations, cardiovascular drugs, hospitalisation and mortality in COVID-19 and Long COVID**. *International Journal of Infectious Diseases*
Project:	CCU060_01: Improving characterisation, prediction and intervention for COVID- and influenza-related morbidity and mortality
DOI:	https://doi.org/10.1016/j.ijid.2024.107155
GitHub:	https://github.com/BHFDSC/CCU060_01

Title:	**Risk of cardiovascular events following COVID-19 in people with and without pre-existing chronic respiratory disease**. *International Journal of Epidemiology*
Project:	CCU035_01: SARS-CoV-2 infection and risk of major vascular events in people with chronic respiratory diseases
DOI:	https://doi.org/10.1093/ije/dyae068
GitHub:	https://github.com/BHFDSC/CCU035_01

Title:	**A nationwide, population-based study on specialized care for acute heart failure throughout the COVID-19 pandemic**. *European Journal of Heart Failure*
Project:	CCU045_01: The impact of COVID-19 on heart failure epidemiology, quality of care and outcomes across primary and secondary care
DOI:	https://doi.org/10.1002/ejhf.3306
GitHub:	https://github.com/BHFDSC/CCU045_01

February 2024

Title:	**Ethnicity data resource in population-wide health records: completeness, coverage and granularity of diversity**. *Scientific Data*
Project:	CCU037_01: Implementing a novel approach to improve correctness, completeness, and granularity of ethnicity information using routinely collected data
DOI:	https://doi.org/10.1038/s41597-024-02958-1

GitHub:	https://github.com/BHFDSC/CCU037_01

January 2024

Title:	**Undervaccination and severe COVID-19 outcomes: meta-analysis of national cohort studies in England, Northern Ireland, Scotland, and Wales**. *The Lancet*
Project:	CCU051_01: Unvaccination and under-vaccination against SARS-CoV-2 in England
DOI:	https://doi.org/10.1016/S0140-6736(23)02467-4
GitHub:	https://github.com/BHFDSC/CCU051_01

October 2023

Title:	**Understanding covid-19 outcomes among people with intellectual disabilities in England.** *BMC Public Health*
Project:	CCU030_01: Understanding covid-19 outcomes among people with intellectual disabilities in England
DOI:	https://doi.org/10.1186/s12889-023-16993-x
GitHub:	https://github.com/BHFDSC/CCU030_01

August 2023

Title:	**Sars-Cov-2 infection in people with Type 1 diabetes and hospital admission: an analysis of risk factors for England**. *Diabetes Therapy*
Project:	CCU040_01: Investigating why some people with diabetes have a greater risk of becoming seriously unwell or dying with COVID-19
DOI:	https://doi.org/10.1007/s13300-023-01456-8
GitHub:	https://github.com/BHFDSC/CCU040_01

Title:	**Antipsychotic drug prescribing and mortality in people with dementia before and during the COVID-19 pandemic: a retrospective cohort study in Wales**. *The Lancet Healthy Longevity*
Project:	CCU016_01: Cardiovascular and cerebrovascular diseases related to antipsychotic prescribing in patients with dementia during the COVID-19 pandemic
DOI:	https://doi.org/10.1016/S2666-7568(23)00105-8
GitHub:	https://github.com/BHFDSC/CCU016_01

July 2023

Title:	**Hospital admissions linked to SARS-CoV-2 infection in children and adolescents: cohort study of 3.2 million first ascertained infections in England**. *BMJ*
Project:	CCU029_01: Hospital admissions linked to SARS-CoV-2 infection in children and adolescents: cohort study of 3.2 million first ascertained infections in England
DOI:	https://doi.org/10.1136/bmj-2022-073639
GitHub:	https://github.com/BHFDSC/CCU029_01

January 2023

Title:	**The impact of the COVID-19 pandemic on cardiovascular disease prevention and management**. *Nature Medicine*
Project:	CCU014_01: Assessing cardiovascular disease impact through medicines
DOI:	https://doi.org/10.1038/s41591-022-02158-7
GitHub:	https://github.com/BHFDSC/CCU014_01

January 2023

Title:	**Harmonising electronic health records for reproducible research: challenges, solutions and recommendations from a UK-wide COVID-19 research collaboration**. *BMC Medical Informatics and Decision Making*
Project:	CCU005_03: Harmonising electronic health records for reproducible research: challenges, solutions and recommendations from a UK-wide COVID-19 research collaboration
DOI:	https://doi.org/10.1186/s12911-022-02093-0
GitHub:	https://github.com/BHFDSC/CCU005_03

November 2022

Title:	**Better End of Life 2022. Mind the gaps: understanding and improving out-of-hours care for people with advanced illness and their informal carers. Research report**. *Marie Curie*
Project:	CCU024_01: Mind the gaps: understanding and improving out-of-hours care for people with advanced illness and their informal carers.
URL:	https://www.mariecurie.org.uk/globalassets/media/documents/policy/beol-reports-2022/better-end-of-life-report-2022.pdf
GitHub:	https://github.com/BHFDSC/CCU024_01

Title:	**Effects of the COVID-19 pandemic on secondary care for cardiovascular disease in the UK: an electronic health record analysis across three countries**. *European Heart Journal - Quality of Care and Clinical Outcomes*
Project:	CCU003_04: Quantifying the impact of the COVID-19 pandemic on the provision of cardiovascular disease-related hospital healthcare in the UK
DOI:	https://doi.org/10.1093/ehjqcco/qcac077
GitHub:	https://github.com/BHFDSC/CCU003_04

Title:	**Using national electronic health records for pandemic preparedness: validation of a parsimonious model for predicting excess deaths among those with COVID-19 – a data-driven retrospective cohort study**. *Journal of the Royal Society of Medicine*
Project:	CCU003_03: Using national electronic health records for pandemic preparedness: validation of a parsimonious model for predicting excess deaths among those with COVID-19.
DOI:	https://doi.org/10.1177/01410768221131897
GitHub:	https://github.com/BHFDSC/CCU003_03

September 2022

Title:	**Association of COVID-19 with major arterial and venous thrombotic diseases: a population-wide cohort study of 48 million adults in England and Wales**. *Circulation*
Project:	CCU002_01: SARS-CoV-2 infection and risk of venous thromboembolism and arterial thrombotic events
DOI:	https://doi.org/10.1161/CIRCULATIONAHA.122.060785
GitHub:	https://github.com/BHFDSC/CCU002_01

June 2022

Title:	**A retrospective cohort study measured predicting and validating the impact of the COVID-19 pandemic in individuals with chronic kidney disease**. *Kidney International*
Project:	CCU003_01: Predicting and validating risk of pre-pandemic and excess mortality during the COVID-19 pandemic in individuals with chronic kidney disease
DOI:	https://doi.org/10.1016/j.kint.2022.05.015
GitHub:	https://github.com/BHFDSC/CCU003_01

Title:	**COVID-19 trajectories among 57 million adults in England: a cohort study using electronic health records**. *The Lancet Digital Health*
Project:	CCU013_01: Characterising COVID-19 related events in a nationwide electronic health record cohort of 57 million people in England
DOI:	https://doi.org/10.1016/S2589-7500(22)00091-7
GitHub:	https://github.com/BHFDSC/CCU013_01_ENG-COVID-19_event_phenotyping

March 2022

Title:	**Evaluation of antithrombotic use and COVID-19 outcomes in a nationwide atrial fibrillation cohort**. *Heart*
Project:	CCU020: Evaluation of antithrombotic use and COVID-19 outcomes
DOI:	http://dx.doi.org/10.1136/heartjnl-2021-320325
GitHub:	https://github.com/BHFDSC/CCU020

Title:	**Risk of myocarditis and pericarditis following BNT162b2 and ChAdOx1 COVID-19 vaccinations**. *medRxiv*
Project:	CCU002_03: COVID-19 vaccination and disease and the risks of myocarditis and pericarditis

DOI:	https://doi.org/10.1101/2022.03.06.21267462
GitHub:	https://github.com/BHFDSC/CCU002_03

February 2022

Title:	**Association of COVID-19 vaccines ChAdOx1 and BNT162b2 with major venous, arterial, or thrombocytopenic events: A population-based cohort study of 46 million adults in England**. *PLOS Medicine*
Project:	CCU002_02: COVID-19 vaccination and disease and the risks of major venous and arterial vascular events
DOI:	https://doi.org/10.1371/journal.pmed.1003926
GitHub:	https://github.com/BHFDSC/CCU002_02

December 2021

Title:	**A nationwide deep learning pipeline to predict stroke and COVID-19 death in atrial fibrillation**. *medRxiv*
Project:	CCU004_02: Prediction of stroke and COVID-19 death using deep learning and sequential medical histories in a nationwide atrial fibrillation cohort
DOI:	https://doi.org/10.1101/2021.12.20.21268113
GitHub:	https://github.com/BHFDSC/CCU004_02

April 2021

Title:	**Linked electronic health records for research on a nationwide cohort of more than 54 million people in England: data resource**. *BMJ*
Project:	CCU005: Data management and analysis methods
DOI:	https://doi.org/10.1136/bmj.n826
GitHub:	https://github.com/BHFDSC/Linked-EHR-England-2021