**Supplemental methods**

*Classification of Cardiovascular Diseases (CVD) and complications of COVID-19*

Myocardial infarction, heart failure, myocarditis, pericarditis were defined according to clinician diagnoses in accordance with internationally recognised guidelines(1-4). Patients with specific cardiomyopathies (e.g., amyloidosis, sarcoidosis and hypertrophic cardiomyopathy) who had a concomitant clinical diagnosis of heart failure documented in the EHR (based on symptoms and signs) were categorised as heart failure. Since the prevalence of specific cardiomyopathies was low, they were not analysed separately. Valvular heart disease refers to ‘severe’ grade disease (i.e., not including mild and moderate disease), as defined by European Society of Cardiology guidelines(5). A pre-existing or new diagnosis of cardiac arrhythmia was defined by the SNOMED CT UK extension parent term “Clinical Arrhythmia” and all daughter terms, and therefore encompasses a wide spectrum of cardiac arrhythmias, including a specific term for atrial fibrillation (which we also report separately). Atrial fibrillation including paroxysmal, persistent and longstanding persistent classifications. Endocarditis was defined according to international guidelines.(6)

Acute myocardial infarction, myocarditis, pericarditis and endocarditis were defined as complications of COVID-19 if a clinician-diagnosis was documented during the hospital admission for COVID-19, based on clinical features, biomarker elevation and where relevant, diagnostic imaging, including echocardiography and coronary angiography, consistent with guideline-directed diagnostic criteria(1, 3, 4, 6). Acute heart failure complicating COVID-19 was defined as a clinician-made diagnosis of acute left or right ventricular failure e.g. acute pulmonary or peripheral oedema, based on clinical criteria and, where available, echocardiography. An exacerbation or decompensation of arrhythmia (including atrial fibrillation) was defined by new or worsening symptoms, haemodynamic instability or poor heart rate control, as documented by the treating physician.

*Cardiovascular drug therapy*

CV drug therapy at the time of admission was recorded including Angiotensin-Converting Enzyme Inhibitors (ACEI), Angiotensin Receptor Blockers (ARB), aldosterone antagonists, beta-blockers, calcium channel antagonists, loop diuretic agents, statins, antiplatelet and anticoagulant therapy.

**Supplemental References**

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