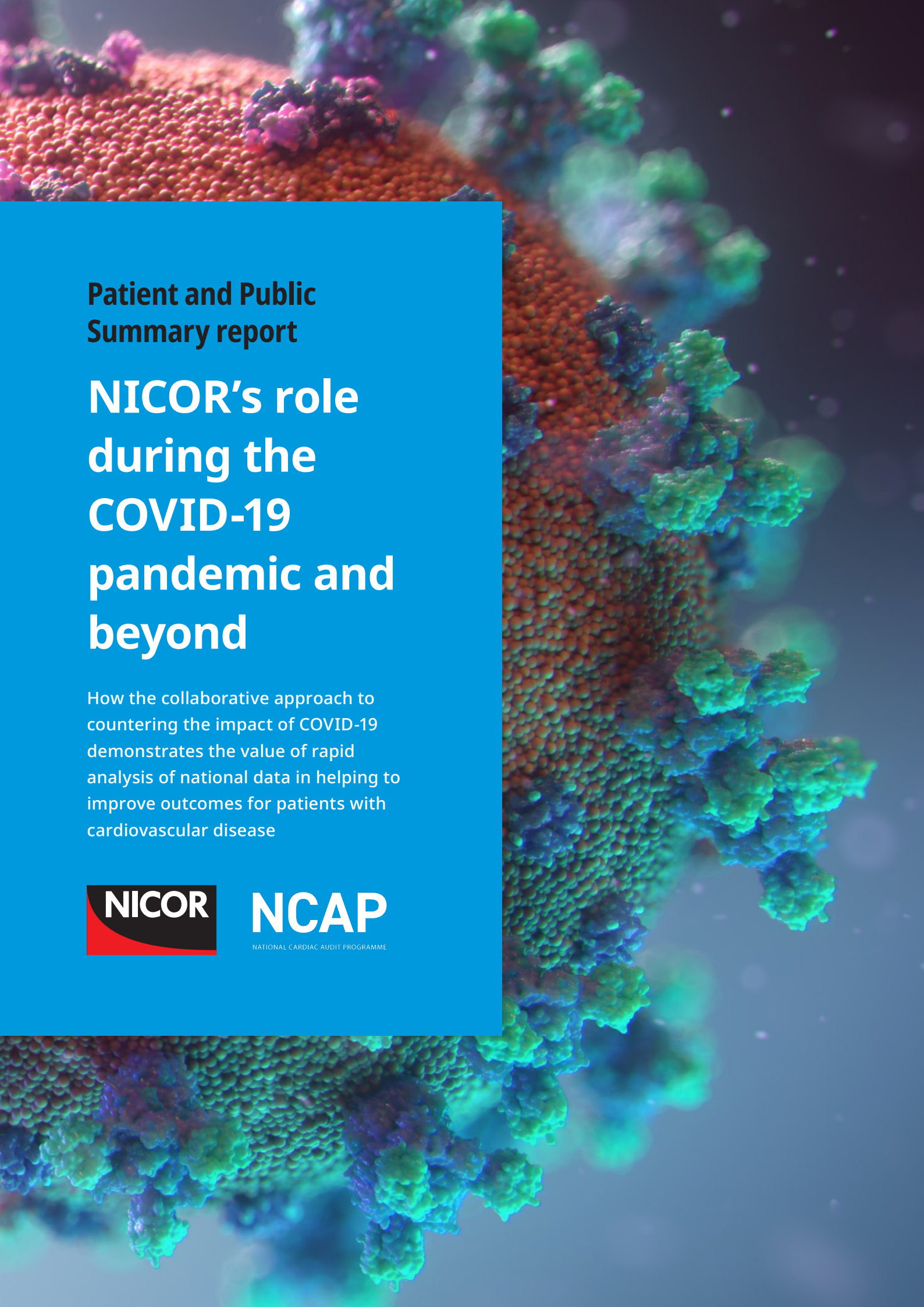


Patient and Public Summary report

NICOR's role during the COVID-19 pandemic and beyond

How the collaborative approach to countering the impact of COVID-19 demonstrates the value of rapid analysis of national data in helping to improve outcomes for patients with cardiovascular disease

NICOR

NCAP

NATIONAL CARDIAC AUDIT PROGRAMME

COVID-19 has had big implications for CVD care amongst the general population

The COVID-19 pandemic has presented all parts of the NHS with major challenges. In a very short period of time, local health systems have been through a major reorganisation of their services to deal with the huge rise in patients requiring critical and specialist care for patients with pneumonia, respiratory failure and sepsis. This has had big implications for the care of people with cardiovascular disease (CVD).

National data have been needed to understand the impact on CVD patients

The National Institute for Cardiovascular Outcomes Research (NICOR) has worked with the national cardiovascular Professional Societies* and individual hospitals to ensure a continuous flow of data to assess the impact of the pandemic on patients with CVD. The national societies represent healthcare workers who treat patients with heart disease and help set standards that should be expected in the delivery of care. A close collaboration between NHS Digital (the national information and technology partner to the health and care system), NICOR and its Data Controllers (including the Healthcare Quality Improvement Partnership and NHS England) has provided the relevant legal permissions to use the national data to assess the impact of COVID-19 on patients with heart disease and on the hospital services that provide their care. The Data Controllers have a duty to safeguard health data on behalf of patients and ensure they are used for the common good and within the necessary legal constraints. By merging the national audit data with the hospital coding data and mortality statistics, analyses have been enabled that have informed Government and NHS policy.

To determine the most important questions to address, NICOR came together with NHS Digital, and research teams from Keele University and the Universities of Leeds and Oxford. This group determined how best to feed information through to the government's Scientific Advisory Group for Emergencies (SAGE) (chaired by the Chief Scientific Advisor, Sir Patrick Vallance) and to NHS England (through the National Clinical Director for Heart Disease, Professor Nick Linker).

Rapid national data on CVD inform immediate policy to improve care and save lives

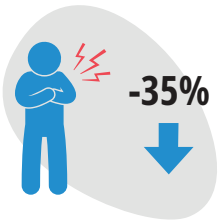
The importance of timely nationwide data collection and submission cannot be over-stressed. This has been a remarkably fast-moving process and we have needed current data to analyse rapidly the impacts, both in terms of understanding the relationship between CVD and COVID-19 outcomes and also the effects of changes to the delivery and take-up of NHS CVD services. It is only with national datasets that the full effects of the pandemic can be rigorously examined and interpreted.

Initial pieces of analysis have assessed the impact of the pandemic on clinical pathways for cardiovascular care

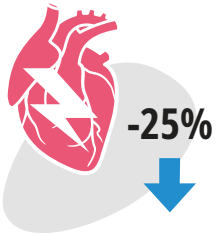
A particular area of focus has been the impact of the pandemic on admissions to hospital, the quality of the delivery of care and survival after heart attacks. There were concerns about patients being frightened to attend hospital when they became ill. An academic group led by Prof Colin Baigent of Oxford University independently analysed the anonymized codes that hospitals use for documenting an admission of a patient with a heart attack ('myocardial infarction' or MI). This team showed a significant fall in the number of patients admitted to hospital with a heart attack in the early months of the pandemic. A second analysis, led by Prof Chris Gale of the University of Leeds, then used NICOR data to look in much greater detail into this decline in hospital presentation.

Prof Mamas Mamas of Keele University led a third analysis of the treatments patients received in hospital using the national coronary angioplasty dataset in NICOR. Professor Gale's and Professor Mamas' teams have also been performing analyses to determine whether there were excess death rates from cardiovascular disease during this period and, if so, where these additional deaths might have occurred. Some of these are on-going. A fourth analysis by collaborative groups within NICOR has evaluated the impact of COVID-19 on routine elective cardiovascular care (including heart surgery, angioplasty and TAVI procedures to give patients a new heart valve without open heart surgery).

These initial pieces of work into the impact of the pandemic on clinical pathways for cardiovascular care have found:

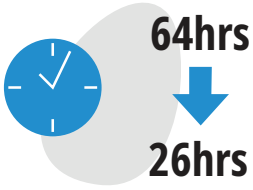


» There was a 35% fall in the number of heart attack admissions to hospital between January and the end of March 2020. This reduction was mostly in the smaller type of heart attacks (so-called non-ST-elevation myocardial infarction or NSTEMI cases – 42% reduction) and predominantly amongst patients who were older and those with comorbidities. Proportionately fewer female patients presented. The reduction in hospital attendance began before the UK lockdown and the numbers started to rise again by the end of April.

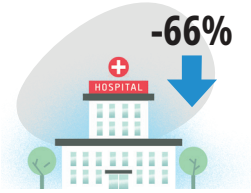


» There was a fall in the number of larger heart attacks (those with ST-elevation myocardial infarction, or STEMI) by about a quarter. Levels of clinical care for patients admitted with such larger heart attacks were maintained with no switch from guideline-driven PCI (percutaneous coronary intervention, or 'angioplasty') to less effective thrombolytic drug therapy (clot busting drugs that had been used in the past). There were some minor delays to treatment overall, more so for those patients who had to be transferred from one hospital to another for angioplasty.

» For patients with the smaller heart attacks (those with NSTEMI), symptom-to-call and call-to-door times for patients with NSTEMI

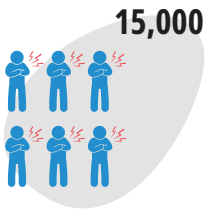


were maintained, but there were fewer inter-hospital transfers for treatment. Fewer patients were managed with an invasive strategy, but for those undergoing this approach delays to coronary angiography fell dramatically from 64 hrs to 26 hrs. The median length of stay in hospital fell from 5 to just 2 days. However, crude 30-day mortality for patients with NSTEMI increased from 5.4% to 7.5%, but fell to 5% during the recovery phase



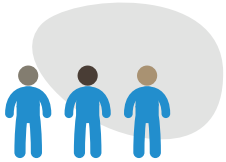
» The fall-off in the number of patients presenting to hospital with heart failure was even more dramatic (a 66% fall in admissions from January to April 2020). Unlike for heart attacks, by mid-May there had been no noticeable upturn in the number of heart failure patients presenting to hospital.

» Since the onset of the COVID-19 crisis, there has been an across the board reduction in the number of interventional procedures for CVD. Within this, (ranging from a drop of 50% for TAVI up to 92% for ablation procedures in April 2020), the drop in elective activity was even more stark, as the average figures are boosted by the emergency and urgent work being prioritised.

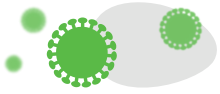


» By the end of April, more than 15,000 first-choice procedures that might have been expected were not performed, often with no clear evidence that patients were offered alternative treatments (for example, TAVI for surgical Aortic Valve Replacement or PCI for coronary artery bypass graft (CABG) surgery). The longer the period when the volume of treatments is lower than normal, the greater the 'catch-up' pressures on subsequent waiting lists will be once the pandemic has passed.

» There has also been an increase in the number of CVD patients presenting to hospital with an out-of-hospital cardiac arrest (OOHA) during the pandemic. These individuals were more likely to be older, female, of Black, Asian and Minority Ethnicity (BAME) and with a background of diabetes or hypertension.



» There were some differences in the clinical pathways for BAME patients suffering a heart attack, with an exaggeration of the delays usually seen. These patients suffered worse outcomes. These differences are not fully explained.



» It is now known that there has been an overall excess in deaths over the numbers expected for the equivalent time periods in previous years, most of which have been due to COVID-19, but a significant number have occurred due to other causes including CV disease. Ongoing research is investigating not only the causes of death but where the deaths occurred.

An integrated analysis of national data may inform COVID-19 risk profiles for those returning to work and help assess the longer-term impacts of the virus

NICOR is now participating in work that will attempt to use national datasets to develop CVD risk profiles for COVID-19 that may be able to inform the 'return to work' strategy. Beyond that, high quality research is needed to understand the longer-term impacts of COVID-19 on CVD, and NICOR is helping make data available to academic partners for this.

Lessons from the COVID-19 experience should shape a better system for rapid nationwide data reporting

The lessons learned from the COVID-19 experience around what it takes to provide high-value rapid information to the government, regions and hospitals across the country should not be lost as healthcare environments attempt to return to normal. Continuous data entry, integrated analysis and timely reporting are all essential to organise and provide optimal care to patients.

*The national cardiovascular Professional Societies we work with are:

The British Cardiovascular Society | Website
The Society for Cardiothoracic Surgery in Great Britain and Ireland | Website
British Cardiovascular intervention Society | Website
British Society for Heart Failure | Website
British Heart Rhythm Society | Website
British Congenital Cardiac Association | Website

Glossary

CABG	Coronary artery bypass surgery - an open heart surgical procedure to bypass narrowings and blockages in heart blood vessels and thereby improve the blood flow to heart muscle.
COVID-19	Coronavirus disease 2019; the name given to the illness produced by the SARS-CoV-2 virus.
CVD	Cardiovascular disease; an overall expression for conditions that affect the heart.
Data Controllers	Organisations that are given the responsibility to safeguard health data collected on patients and to ensure they are used appropriately and within the law.
ECG	Electrocardiogram. This is an electrical recording of the heart beat that is measured from patches on the arms, legs and chest wall that gives important information on the function of the heart.
Myocardial infarction (MI)	A heart attack, most often caused by a sudden blockage or partial blockage by a blood clot in a heart blood vessel (coronary artery).
NCAP	National Cardiac Audit Programme.
NHS	National Health Service.
NHS Digital	The national information and technology partner to the health and care system (link).
NICOR	National Institute for Cardiovascular Outcomes Research (link).

NSTEMI	non-ST-elevation myocardial infarction. A type of heart attack often caused by a partial blockage of a heart blood vessel. Although there can be changes on an electrocardiogram (ECG) with this sort of heart attack, there is no evidence of a specific change called ST-elevation, associated with heart attacks that can lead to greater heart muscle damage if left untreated (STEMI – see below).
OOHA	Out-of-hospital cardiac arrest. An expression used when a patient collapses suddenly at home due to a disturbance of heart rhythm. Although a few patients recover spontaneously, emergency treatment is usually required to restore a normal heart rhythm.
PCI	Percutaneous coronary angioplasty (or 'coronary angioplasty'). This is a treatment to unblock heart blood vessels or to widen a narrowing in these vessels. A fine tube, known as a catheter, is passed to the heart under local anaesthetic to find out where the blockage is. Then a balloon and wire mesh 'stent' is used to open up the blockage and improve blood flow to the heart muscle. The catheter may be inserted via the wrist or upper part of the leg.
SAGE	Scientific Advisory Group for Emergencies (link). SAGE provides scientific and technical advice to support government decision makers during emergencies.
STEMI	ST-elevation myocardial infarction. Usually caused by a complete blockage of a major heart blood vessel and associated with a special change on an electrocardiogram (ECG) referred to as ST-elevation.
TAVI	Transcatheter aortic valve implantation. A way of replacing a narrowed aortic valve in the heart, most often without having to perform open heart surgery, through a tube inserted into the upper part of the leg.