

NICE impact cardiovascular disease management



Contents

- 03** Why focus on cardiovascular disease management?
- 05** Assessment of recent chest pain
- 08** Acute coronary syndromes
- 13** Heart failure
- 19** Cardiac rehabilitation
- 23** Responding to COVID-19
- 24** What's next for cardiovascular disease management?

Insight from Professor Simon Ray



Professor Simon Ray is President of the British Cardiovascular Society, and joint National Lead for the Getting It Right First Time (GIRFT) cardiology workstream.

There are good reasons for NICE to focus on cardiovascular disease. Despite substantial improvements since 2001, cardiovascular disease remains the major cause of avoidable premature illness and death in men and the second most common cause in women. There is still a 5-fold variation across the country in the death rate from coronary artery disease in people aged under 75, with higher rates in the North of England.

We also know that even before COVID-19 many hospitals lacked the resources to fully implement NICE guidance and that there is continuing unwarranted variation in the provision of care.

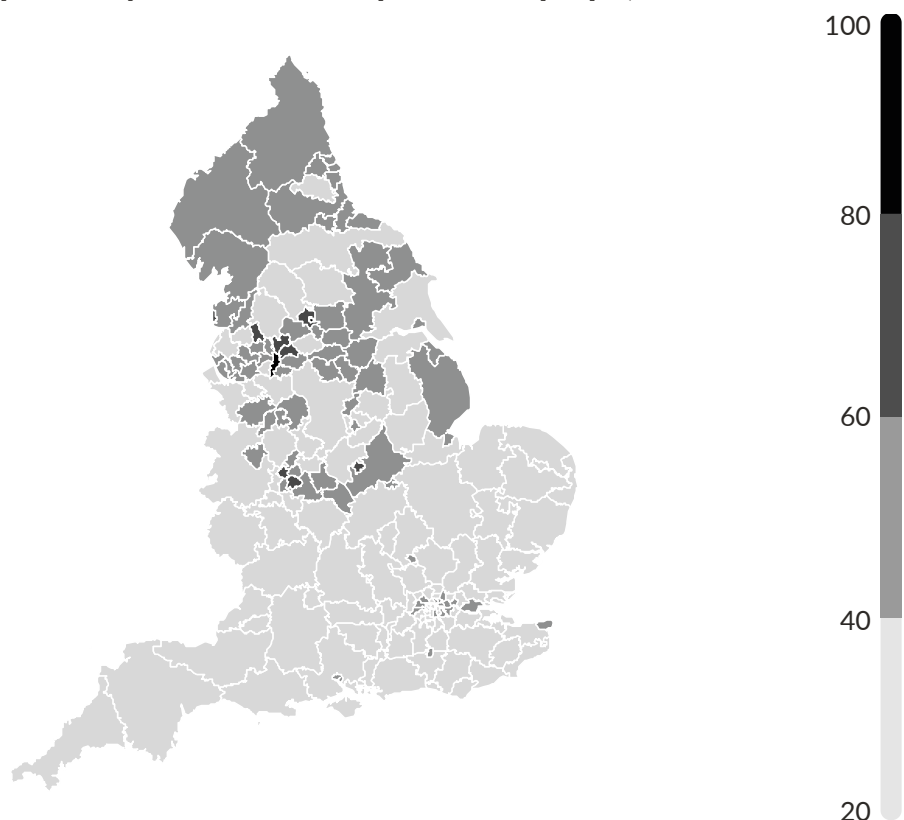
Why focus on CVD management?

Cardiovascular disease (CVD) is [one of the most common causes of death in England](#), and more than 6 million people live with CVD. Healthcare costs relating to CVD are estimated at £7.4 billion per year. CVD is one of the conditions most strongly associated with health inequalities, with [higher premature death rates in more deprived areas](#).

120,000 people a year die from diseases of the circulatory system ([NOMIS, Mortality statistics](#), 2019)

[NHS England's Long Term Plan](#) highlights that improvements in the mortality rate for CVD have slowed and it remains the biggest cause of premature mortality. The Long Term Plan therefore suggests that CVD is the biggest single area in which the NHS can save lives over the next 10 years, and prioritises improvements in prevention and management.

Geographical variation in deaths from coronary heart disease in people under 75 in England (Clinical Commissioning Groups, directly standardised rate per 100,000 people)



Source: [Public Health England, Public health profiles](#), 2016 to 2018

Since the publication of NICE's technology appraisal guidance on coronary artery stents in 2000, NICE has published a [suite of guidance and quality standards on the prevention and management of CVD](#).

Deaths from diseases of the circulatory system considered treatable are decreasing in England



Source: [Office for National Statistics, avoidable mortality in the UK dataset](#), 2018

We looked at the uptake and impact of some of NICE's guidance on the prevention and management of CVD in previous [NICE impact reports on stroke and CVD prevention](#). The CVD prevention report looked at the diagnosis and management of 6 high-risk conditions, including high blood pressure and atrial fibrillation. This report will be updated in 2021 and will look in more detail at health inequalities in this area.

In this report on CVD management, we will look at what we know about the uptake and impact of NICE's guidance on chest pain, acute coronary syndromes and heart failure. Most of the data available are on the impact of our guidance before the COVID-19 pandemic. However, where possible, data collected during the pandemic are included in this report.

The report also highlights some of the ways that healthcare professionals have worked to deliver care differently during the pandemic, such as increasing the availability of digital and home-based cardiac rehabilitation programmes.

We have published



Assessment of chest pain

The [NICE guideline on assessing and diagnosing recent-onset chest pain of suspected cardiac origin](#) aims to improve the speed and accuracy of diagnosis. The guideline incorporates [NICE diagnostics guidance on high-sensitivity troponin tests](#) for the early rule out of NSTEMI and [medical technologies guidance on HeartFlow FFR_{CT}](#) for estimating fractional flow reserve from coronary CT angiography.

These products were selected by the [NHS Accelerated Access Collaborative](#) (AAC) as rapid-uptake products. The AAC brings together industry, government, regulators, patients and the NHS to remove barriers and accelerate the introduction of new treatments and diagnostics.



The AAC's ambition is to make the UK one of the most pro-innovation health systems in the world ([The AAC: about us](#))

NICE supports the AAC by carrying out a range of activities to support early stage (before a NICE appraisal) products and categories selected by the AAC. NICE also contributes to a range of activities to support the adoption and spread of proven innovations selected by the AAC.

High-sensitivity troponin tests

When someone comes to a hospital emergency department with acute chest pain, tests are needed to work out if they are having a heart attack and, if so, the type and treatment needed. High-sensitivity troponin tests can help to rule out a type of heart attack called a non-ST-segment-elevation myocardial infarction (NSTEMI) in 20 minutes or less, with a second test for people at low risk if the first is positive.

Older-style troponin tests take 10 to 12 hours, so people need to be admitted while they wait for the results. High-sensitivity tests can mean people with normal troponin levels do not need to be admitted to hospital, and those with a confirmed NSTEMI can get earlier treatment.

270,000 people had high-sensitivity troponin tests in 2018/19
(estimated by the AAC)

Putting guidance on high-sensitivity troponin tests into practice

NICE has produced an [adoption support resource for high-sensitivity troponin testing](#). This provides practical information and advice to NHS organisations on adopting these tests, including tools developed by organisations that have already incorporated the tests in their cardiac chest pain pathways.

‘I was given my first troponin test in A&E. The score was 5 and it really put me on edge. I knew that having a high score was not good news and if the next test was higher, I’d be staying in hospital. The second result thankfully went in the right direction.’

Antony, aged 49

Shared learning examples, describing how 2 NHS trusts adopted these tests, are available on the NICE website. The [Royal Wolverhampton NHS Trust updated their chest pain pathway to incorporate the use of high-sensitivity troponin tests](#). The test results help guide decisions on whether to admit people presenting with chest pain, or whether they can be safely discharged. The new pathway resulted in reduced hospital admissions and length of stay.

[Belfast Health and Social Care Trust piloted a 1-hour rule-out protocol using a high-sensitivity troponin test](#). Results showed that this protocol was appropriate and safe for use in their trust, meaning that people who were categorised as ‘go home’ could be discharged more quickly. This category applied to 70% of the people tested during the pilot.

HeartFlow FFR_{CT}

When someone presents with stable chest pain, it may indicate stable angina. If this cannot be excluded by clinical assessment alone, diagnostic tests may be required. One such test is fractional flow reserve (FFR), which is measured using a pressure wire placed across a narrowed artery during invasive coronary angiography.

HeartFlow FFR_{CT} is software that avoids the need for an invasive procedure by estimating FFR from CT coronary angiography.

The number of people who had testing with HeartFlow FFR_{CT} has increased

2018/19 **2019/20**

3,289  **5,866** people who had testing with HeartFlow FFR_{CT}

Source: AAC

Putting guidance on HeartFlow FFR_{CT} into practice

While the number of people who had testing with HeartFlow FFR_{CT} has increased, the AAC estimates that this is less than 20% of the eligible population. To help put this guidance into practice, NICE worked with NHS organisations who have used the technology to produce an [adoption support resource on HeartFlow FFR_{CT}](#). This provides practical information and advice on adopting HeartFlow FFR_{CT} in the NHS.

NHS trusts have described the steps they took to put this guidance into practice in [shared learning examples for HeartFlow FFR_{CT}](#). The Newcastle upon Tyne Hospitals NHS Foundation Trust reduced their use of functional and invasive investigations for initial testing by using HeartFlow FFR_{CT}.

Royal United Hospitals Bath NHS Foundation Trust have seen interventional cardiologists increasingly using HeartFlow FFR_{CT} data to plan invasive procedures and reduce certain invasive physiology assessments. This has resulted in increased catheterisation laboratory efficiency.

Insight from Professor Simon Ray

In many hospitals rapid access chest pain clinics are under great pressure and there are delays in accessing non-invasive imaging.

The adoption of CT coronary angiography as a first-line investigation and the ability to add functional imaging with FFR_{CT} offer the possibility of reducing the number of investigations required to reach a definitive management plan.

However substantial investment is required both

in suitable CT scanners and in staff trained and timetabled to perform and report the scans.

High-sensitivity troponin testing is a major advance in the management of patients with a suspected acute coronary syndrome as it allows confident rule out and discharge in a substantial proportion. Clinical context is very important, as high-sensitivity troponin is frequently raised in patients who are sick with sepsis or other severe illnesses without evidence of a treatable acute coronary syndrome.

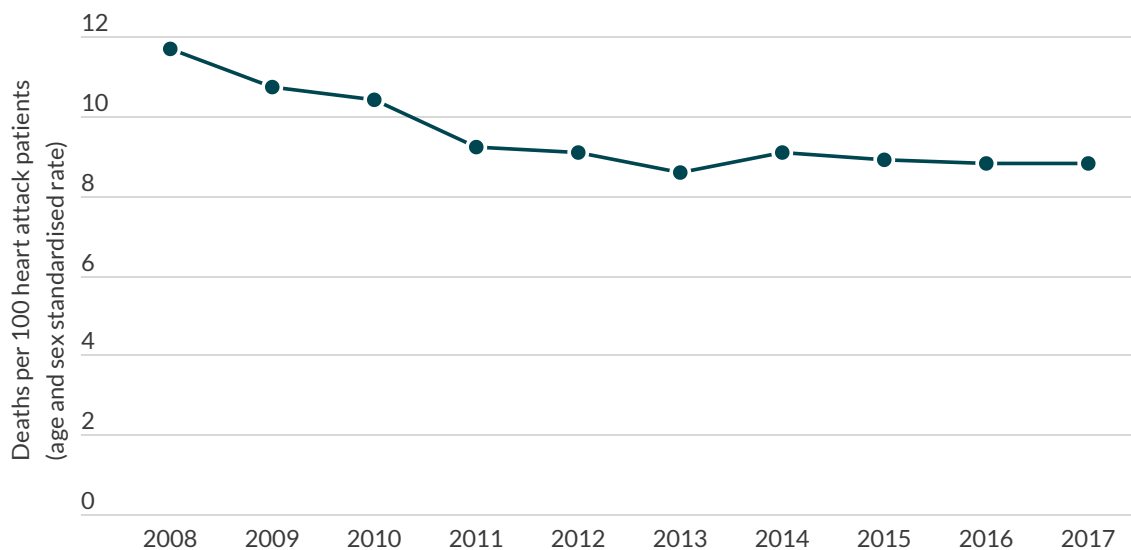
Acute coronary syndromes

Acute coronary syndromes are a spectrum of conditions which include unstable angina and myocardial infarction (MI), also known as a heart attack.

82,000 hospital admissions a year are as a result of heart attack
([NHS Digital, Hospital Admitted Patient Care Activity](#), England 2019/20)

Healthcare quality indicators [data compiled by the Organisation for Economic Co-operation and Development](#) (OECD) show that a higher proportion of people in the UK now survive a heart attack, although improvement appears to have levelled off.

**Reduction in the mortality rate in people admitted to hospital after a heart attack in the UK
(30-day mortality in people aged 45 and over)**



Source: [OECD, Healthcare Quality Indicators: Acute Care](#)

In 2000, we published our first piece of guidance related to these conditions, on glycoprotein IIb/IIIa inhibitors in the treatment of acute coronary syndromes. Since then, we have published [a suite of guidance and advice on this topic](#). In November 2020, we brought together and updated many of our previous recommendations in a combined [NICE guideline on acute coronary syndromes](#), which covers early and longer-term management. It aims to improve survival and quality of life for people who have a heart attack or unstable angina.

Early management of STEMI

ST-segment elevation myocardial infarction (STEMI) is the most serious type of heart attack. It occurs when there is an interruption to the blood supply caused by a total blockage of the coronary artery.

The section on [early management of STEMI in NICE's guideline on acute coronary syndromes](#) recommends that people with acute STEMI should be immediately assessed for eligibility for coronary reperfusion therapy (treatment to restore blood flow), and that the intervention should be delivered as quickly as possible.

This is because heart muscle starts to be lost once a coronary artery is blocked, so the sooner reperfusion therapy is given the better the outcome.

'I drove myself to A&E after experiencing what I now know to be unstable angina. After tests they advised that I was "having a heart attack, and not the good kind". I was told there was a limited window to undertake the stent procedure and at 5am this couldn't be done at my local hospital. I was transferred and whisked into the PCI suite. Five years on I have no symptoms of heart disease and can walk briskly over 5 miles with ease.'
Paul, who was 45 when he had STEMI

Primary percutaneous coronary intervention (PCI) is a form of reperfusion therapy which is carried out in a specialist centre. It involves the insertion of a balloon to open up the artery, and a stent, which is left in place to allow blood to flow more freely. When performed early, primary PCI is more effective than fibrinolysis (drug treatment).

NICE recommends it as the preferred coronary reperfusion strategy if the person presents within 12 hours of the onset of symptoms, but only if PCI can be delivered within 2 hours of the time when fibrinolysis could have been given.

Data from the [National Institute for Cardiovascular Outcomes Research \(NICOR\) Myocardial Ischaemia National Audit](#) show that, since 2015, there has been a reduction in the proportion of people receiving PCI soon after presenting with STEMI.

There has been a reduction in the proportion of people receiving primary PCI soon after presenting with STEMI

2015/16 2018/19

52% ↓ 42% of people had primary PCI within 2 hours of the call for help

Source: [NICOR, Myocardial Ischaemia National Audit](#), 2020 summary report

This time is made up of 2 elements: the time from call for help to arriving in hospital and the time from arrival in hospital to treatment. The audit highlights that there has been minimal change in the second element, with around 88% of people receiving treatment within 90 minutes of arriving in hospital. It is therefore likely that the reduction in the proportion of people being treated within 2 hours is due to an increase in time taken to arrive in hospital.

Early management of NSTEMI

Non-ST-segment-elevation myocardial infarction (NSTEMI) can be less serious than STEMI because the supply of blood to the heart may be only partially, rather than completely, blocked. However, without treatment, it can progress to serious heart damage or STEMI.

The section on [early management of NSTEMI and unstable angina in NICE's guideline on acute coronary syndromes](#) recommends that people with NSTEMI who have an intermediate or higher risk of future adverse cardiovascular events are offered imaging with a coronary angiography, with follow-on PCI if indicated, within 72 hours of first admission to hospital.



Services should provide coronary angiography (with follow-on PCI if indicated) as soon as it offers clinical benefit; they should not wait until 72 hours if this is sooner.

[\(NICE's quality standard on acute coronary syndromes\)](#)

This updates the 2013 NICE guideline, which recommended 96 hours as the maximum time before angiography. However, [NICE's quality standard on acute coronary syndromes](#), published in 2014, gave a 72-hour target as a marker of good quality care.

Data from NICOR's Myocardial Ischaemia National Audit show that, since 2015, there has been an increase in the proportion of people who underwent angiography within 72 hours. However, more than 40% do not meet this target.

There has been an increase in the proportion of people with NSTEMI who had angiography within 72 hours of admission to hospital.

2015/16 2018/19

53% ↑ 57% of people had angiography within 72 hours of admission

Source: [NICOR, Myocardial Ischaemia National Audit](#), 2020 summary report

Insight from Professor Simon Ray

The rollout of primary PCI has been one of the major success stories of the last 10 years and has revolutionised the treatment of STEMI but there are significant pressures on the delivery of timely care.

We know that ambulance services are hard pressed and it is worrying that the time taken for patients to arrive at hospital after calling for help has increased by about 10 minutes since 2014/15 as this translates to around 100 excess deaths across the

UK. We also know that median call to door times vary substantially between ambulance trusts and this variation needs to be addressed nationally.

One of the difficulties in achieving the 72-hour target for angiography in NSTEMI patients is in the transfer of patients admitted initially to hospitals without facilities for PCI. One possible means of improving this situation is the redesign of network pathways incorporating 7-day access to catheter labs.

Management of acute coronary syndromes during the COVID-19 pandemic

There was a reduction in heart attack admissions during the early stages of the COVID-19 pandemic of about one third compared with the average for 2019.

A [NICOR report on COVID-19](#) suggests that people may have stayed away to avoid putting pressure on NHS services, because they were afraid of catching COVID-19 or because they were advised to stay home during the lockdown. Long-term effects of this reduction in admissions are not yet clear.



Standards of clinical care for patients presenting with STEMI have been maintained, with no switch from PCI to less effective drug therapy. ([NICOR report on COVID-19](#))

NICOR's report highlights that there was a reduction in hospital admissions for STEMI of between 23% and 29% compared with the average for 2019. This started before the first UK lockdown, but the numbers had started to recover by the end of May 2020. There were no major delays to treatment times, with only a small increase of 4 minutes in the median time from arriving in hospital to receiving treatment.

The fall in admissions of people with NSTEMI was larger than for people with STEMI. There were between 42% and 49% fewer admissions than the average for 2019. Fewer people self-presented, rather than arriving in an ambulance, and there were fewer admissions for women, older people, and those with diabetes and other comorbidities. This suggests that people from these groups may have avoided attending hospital during the early period of the pandemic.

'I was feeling very hot with a tight chest and the arrhythmia was going wild. Because of the chest symptoms I was thinking, is this COVID? I really didn't want to show up at A&E, have tests and then be told everything was ok and feel like a time-waster, but my GP told me to ring 999 so I felt like I should definitely do this! I think going to A&E now presents a whole new level of anxiety but I knew I needed to get my heart checked out.'

Antony, aged 49

Heart failure

Heart failure happens when the heart is unable to pump blood around the body properly. The most common cause is coronary heart disease, and many people with heart failure have previously had a heart attack. It can also be caused by high-risk conditions such as high blood pressure or atrial fibrillation. It can occur at any age but is more common in older people.

Data from [NHS Digital's Quality and Outcomes Framework](#) show that more than 540,000 people in England are recorded on their GP's register as having heart failure. However, the [NHS Long Term Plan highlights that 80% of heart failure is currently diagnosed in hospital](#), despite 40% of people having symptoms that should have triggered an earlier assessment in primary care. This suggests that many people live with undiagnosed heart failure.



A study using data from primary and secondary care estimated there are 900,000 people living with heart failure in the UK

([The Lancet, Temporal trends and patterns in heart failure incidence](#), 2017)

NICE has published a [suite of guidance and advice on heart failure](#), including guidelines on the diagnosis and management of acute and chronic heart failure.

Acute heart failure in hospital

Acute heart failure can present as new-onset heart failure in people without known cardiac dysfunction, or as sudden worsening of the signs and symptoms of chronic heart failure. The number of hospital admissions for heart failure has been increasing for a decade. This may be because the population is aging and people are living longer with heart failure.

The number of hospital admissions for heart failure in England has risen in the last decade

2008/09		2018/19	
58,000	↑	85,000	admissions for heart failure

Source: [Public Health England, Cardiovascular disease profiles](#)

Specialist heart failure team

[NICE's guideline on acute heart failure](#) recommends that all people admitted to hospital with suspected acute heart failure have early and continuing input from a dedicated specialist heart failure team. This can help to ensure rapid diagnosis and contribute to reduced readmissions and better quality of life. [NICOR's National Heart Failure Audit](#) found that 82% of people admitted to hospital with heart failure were seen by a heart failure specialist.

People who saw a specialist during an unscheduled visit to hospital with heart failure



Source: [NICOR, National Heart Failure Audit](#), 2020 summary report

[NICE's quality standard on acute heart failure](#) states that specialist heart failure teams should include heart failure specialist nurses. Nearly half the people who had an unscheduled admission for heart failure in 2017/18 saw a heart failure specialist nurse during their stay in hospital. The NHS Long Term Plan commits to improving rapid access to heart failure nurses in hospital so that more people who are not on a cardiology ward receive specialist care and advice.

'I received excellent support from the specialist heart failure nurses at my local hospital but I wasn't referred to the unit until after I had been admitted, not on diagnosis. I could have potentially avoided the hospitalisation, had I been given the information I received from the unit.'
Gail, who has chronic heart failure with acute episodes

Heart failure admissions and COVID-19

[NICOR's report on COVID-19](#) found that there was a substantial drop-off in admissions for heart failure during the early months of the pandemic. There was a 66% drop in admissions in April 2020 compared with April 2019, and this did not appear to be increasing in May 2020. It is not yet clear what effect this will have on outcomes in the longer term.

Diagnosis and management of chronic heart failure

[NICE's guideline on chronic heart failure](#) recommends that N-terminal pro-B-type natriuretic peptide (NT-proBNP) should be measured in people with suspected heart failure. People whose NT-proBNP levels are above 400 ng/litre should be referred for an echocardiogram and specialist assessment, to confirm the diagnosis and develop a management plan.

Data from [NHS Digital's Quality and Outcomes Framework](#) show that, in 2019/20, 90% of people who were recorded by their GP as having heart failure had this diagnosis confirmed by an echocardiogram or by specialist assessment 3 months before or 12 months after being entered on the heart failure register.

[This measure has been updated for 2020/21](#) to encourage earlier confirmation. GPs will now be asked to record whether a person had their heart failure diagnosis confirmed between 3 months before or 6 months after being entered on the register. People newly registered in the past 12 months should have a record of an echocardiogram or a specialist assessment within 6 months.



More than 4 in 5 people who took part in the Pumping Marvellous Foundation community survey said they were referred to a heart failure specialist when they were diagnosed.

The [Pumping Marvellous Foundation community survey](#) found that almost all respondents said they'd prefer to be referred to a heart failure specialist to optimise their condition and treatment. NICE recommends that specialist heart failure multidisciplinary teams (MDTs) should diagnose heart failure, give information to people who are newly diagnosed, and optimise treatment. The MDT should work in collaboration with the primary care team, and should write a summary for each person with heart failure that forms the basis of their care plan.

However, only 6% of the survey respondents said they had a care plan. Most said they did not have one (71%) or did not know what one was (22%). NICE recommends that a care plan should be developed for each person, with a copy given to them and everyone involved in their care.

Pharmacological treatment

[NICE's guideline on chronic heart failure](#) recommends offering an ACE inhibitor and a beta-blocker licensed for heart failure to people who have heart failure with reduced ejection fraction. ACE inhibitors work by causing relaxation of blood vessels to lower blood pressure. Beta-blockers slow the heart rate by blocking the release of stress hormones.

An angiotensin II receptor blocker (ARB) licensed for heart failure should be considered as an alternative to an ACE inhibitor for people who have heart failure with reduced ejection fraction and intolerable side effects with ACE inhibitors.

Data from [NHS Digital's Quality and Outcomes Framework](#) show that, in 2019/20, 82% of patients with a current diagnosis of heart failure due to left ventricular systolic dysfunction were being prescribed an ACE inhibitor or ARB. Of those, 82% were also prescribed a beta-blocker licenced for heart failure. However, there is variation in these rates across clinical commissioning groups (CCGs). From 2020/21, GPs will record the proportion of all eligible people who are prescribed a beta-blocker, not just those already receiving an ACE inhibitor or ARB.

Prescribing of ACE inhibitors or ARBs and beta-blockers for heart failure varies across CCGs

Highest Lowest

91%	74%	of people were prescribed an ACE inhibitor or ARB
89%	76%	of people were also prescribed a beta-blocker

Source: [NHS Digital, Quality and Outcomes Framework](#), 2019/20

For people who continue to have symptoms of heart failure when taking an ACE inhibitor or ARB and a beta-blocker, NICE recommends also offering a mineralocorticoid receptor antagonist (MRA). This recommendation was updated in 2018. Previously, NICE recommended that an MRA should be considered, and that specialist advice should be sought before prescribing this medicine.

[NICOR's National Heart Failure Audit](#) found that more people are being discharged from hospital following an unscheduled admission with heart failure with all 3 of an ACE inhibitor or ARB, a beta-blocker and an MRA.

More people are being prescribed an ACE inhibitor or ARB, a beta-blocker and an MRA

2016/17 2018/19

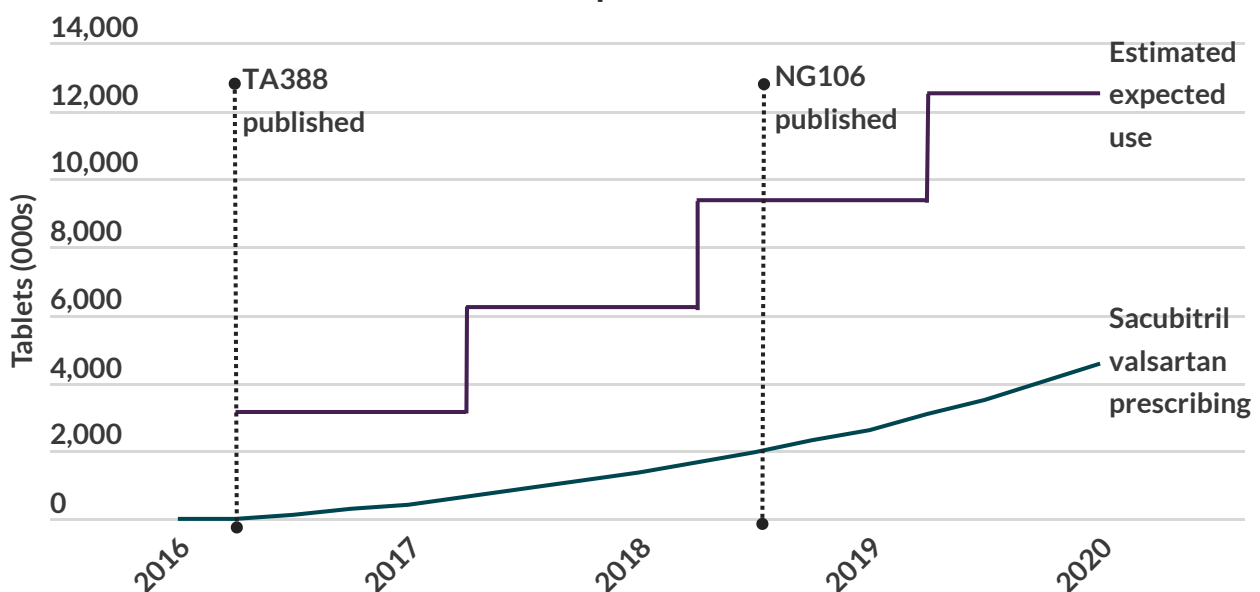
42% ↑ 48% of people discharged from hospital with all 3 medicines

Source: [NICOR, National Heart Failure Audit](#), 2020 summary report

For some people who continue to have symptoms of heart failure when taking an ACE inhibitor or ARB, [NICE recommends sacubitril valsartan](#) as an option in place of these medicines. [NICE's resource impact report for sacubitril valsartan](#) estimated that uptake of this medicine would increase each year after the recommendation, and 60% of eligible people would have it from 2020/21 onwards.

Data from [NHS Digital's Innovation Scorecard](#) show that prescribing has increased for sacubitril valsartan since it was recommended in 2016. While prescribing remains below the estimated expected use, it should be noted that there can be uncertainty in estimates.

The prescribing of sacubitril valsartan in primary and secondary care in England has increased since NICE first recommended it in April 2016



Source: [NHS Digital, NICE Technology Appraisals in the NHS in England](#) (Innovation Scorecard)

NICE worked with NHS clinicians to share their learning and experiences and has produced an [adoption support resource for sacubitril valsartan](#). The resource provides practical information and advice for services planning to implement the guidance and start using this medicine.

Insight from Professor Simon Ray

Heart failure is underdiagnosed in the community. Key to early detection is the availability of the blood test for NT-proBNP. We know that access to this test is not universal within primary care and this is something that should be addressed as a priority.

Patients with heart failure often have other problems such as diabetes and kidney disease and may end up attending a number of specialist clinics.

The development of new classes of drugs for the treatment of both heart failure and diabetes offers an opportunity to promote a more holistic approach to treatment.

Long-term care for heart failure patients can also be disjointed and it is important that in the future primary and secondary care heart failure teams are fully integrated.

Cardiac rehabilitation

Cardiac rehabilitation aims to address the underlying causes of CVD and improve physical and mental health after a cardiac event.

The section on [cardiac rehabilitation after an MI in NICE's guideline on acute coronary syndromes](#) recommends that all people should be given advice about and offered a cardiac rehabilitation programme with an exercise component after a heart attack. [NICE's guideline on chronic heart failure](#) recommends offering people a personalised, exercise-based programme unless their condition is unstable.

'Rehab gave me confidence that exercise was not dangerous. I went to follow-up classes with specially qualified instructors at the local leisure centre before COVID-19 and they have provided the basis of a daily exercise routine that I have followed since lockdown.'

Robert, aged 86, who had a pacemaker fitted after a heart attack in 2004

Data from the [British Heart Foundation's National Audit of Cardiac Rehabilitation](#) show how successful this can be. People who took part increased their levels of activity and more people met their cholesterol targets. There were also smaller improvements in smoking status, anxiety and depression scores, blood pressure, waist circumference and alcohol consumption.

More people did at least 150 minutes of moderate intensity physical activity per week after completing a cardiac rehabilitation programme



Source: [British Heart Foundation, National Audit of Cardiac Rehabilitation](#), 2019

Improving access to and uptake of cardiac rehabilitation is a key priority in the [NHS Long Term Plan](#). By scaling up and improving marketing of cardiac rehabilitation, the NHS hopes to prevent up to 23,000 premature deaths and 50,000 acute hospital admissions over 10 years.

Uptake of cardiac rehabilitation

The NHS Long Term Plan sets a target of up to 85% of eligible people accessing cardiac rehabilitation by 2028. The [National Audit of Cardiac Rehabilitation](#) found that, overall, 50% of eligible people took up cardiac rehabilitation in 2017/18. These data were not reported in the most recent audit because of the pressures on clinical teams during the COVID-19 pandemic.

‘I’m an ex-nurse and my husband had cardiac rehab at home. It was brilliant and really helped him, and me as well. We went on to attend rehab locally with other people in a similar situation. A lot of people in our rural area are not and are never likely to be online.’

Hilarie, who now runs a cardiovascular exercise group

[NICOR’s Myocardial Ischaemia National Audit](#) found that 82% of all people discharged home after a heart attack were referred for cardiac rehabilitation. However, not everyone takes this up. The National Audit of Cardiac Rehabilitation found variation between uptake in different treatment groups. People who had invasive treatment such as PCI were more likely to take part in cardiac rehabilitation programmes.

The uptake of cardiac rehabilitation after heart attack varies in different treatment groups

29% in people who had medical management

58% in people who had PCI

Source: [British Heart Foundation, National Audit of Cardiac Rehabilitation](#), 2019

Referral rates for people with heart failure are not as clearly recorded. Data from [NICOR’s National Heart Failure Audit](#) show that just 13% of people with heart failure were referred for cardiac rehabilitation during hospitalisation in 2018/19, although more may have been referred after discharge. The National Audit of Cardiac Rehabilitation reported that more than 5,500 people with heart failure took part in a cardiac rehabilitation programme in 2017/18.

While this has increased (from around 4,300 in 2015/16), it seems likely that many people with heart failure who could be helped are not currently accessing these programmes.

Delivering cardiac rehabilitation during the COVID-19 pandemic

NICE recommends that cardiac rehabilitation should be offered in a choice of venues, including the person's home. However, data from the [National Audit of Cardiac Rehabilitation](#) show that, in 2017/18, most cardiac rehabilitation was still group-based. Less than 10% took place at home, and a very small proportion of people took part in web-based programmes.

'The cardiac rehab I had was a bit of a one-size-fits-all service and didn't really feel tailored to my experience. I was the youngest - 46 - and one of only 2 women and the fittest. A digital option would have been rather useful, as I could have applied it to my usual activity.'

Sarah, who had 3 heart attacks in 2018

During the early stages of the COVID-19 pandemic, social distancing requirements meant that the delivery of group-based cardiac rehabilitation became difficult.

The National Audit of Cardiac Rehabilitation looked at the delivery of services in the 6 months before (August 2019 to January 2020) and during (February to July 2020) the pandemic. The overall number of people who were reported as taking part in cardiac rehabilitation dropped during this period, but there was an increase in the number of people using a self-managed option.

'My recovery was due in no small part to the rehabilitation course at my local hospital. When I reached the end of this, I joined a group for ongoing exercise and rehab classes. These were suspended when COVID-19 came on the scene, but fortunately our trainer started an online class.'

Stephen, who had a heart attack and PCI in 2015

However, the data suggest a widening of the gap in uptake among people with different conditions. The proportion of all cardiac rehabilitation participants who had a heart attack and PCI increased, from 32% to 37% of the total. The proportion with heart failure reduced, from 7% to 5% of all people receiving cardiac rehabilitation.

Home-based cardiac rehabilitation for people with heart failure

[REACH-HF \(Rehabilitation Enablement in Chronic Heart Failure\)](#) is a facilitated cardiac rehabilitation and self-management programme for use at home. It was developed to improve the historically low uptake of cardiac rehabilitation for people with heart failure by providing a home-based, self-care programme which can be offered as an alternative option to centre-based rehabilitation.

'I would have liked to have been able to access a home programme but was not given this option. I felt the rehab was very valuable but a lot of the time was spent introducing new members!'

Rachel, who has heart failure

The team developing REACH-HF adapted the programme to ensure people could receive rehabilitation during the COVID-19 pandemic, including cancelling home and clinic visits and increasing telephone support for participants. Nearly 90 health professionals were trained to deliver REACH-HF during the pandemic.

The programme is described in more detail, including results from the 4 beacon sites, in a [shared learning example on the NICE website](#).

Insight from Professor Simon Ray

Cardiac rehabilitation does not get the emphasis that it deserves given its proven benefits and cost effectiveness.

This is particularly the case for heart failure which is actively excluded from some rehabilitation services, largely due to a lack of resource. This needs to change and rehabilitation should be offered to all

suitable heart failure patients including those with preserved ejection fraction.

Inevitably COVID-19 has had a big impact on rehabilitation but has driven a move to home-based programmes delivered virtually, which for some individuals may be more effective than traditional group-based classes.

Responding to COVID-19

COVID-19 has affected CVD management in many ways. In the early stages of the pandemic, [chronic heart disease was the most common comorbidity](#) among those admitted to hospital with COVID-19. At the same time, the [reduction in people presenting to hospital](#) suggests some people with CVD were avoiding hospital care.

Throughout the COVID-19 pandemic, [NICE supported the NHS and social care](#) by providing guidance about COVID-19 and supporting efforts to get promising diagnostics and treatments to patients quickly.

Acute myocardial injury was observed in many patients with COVID-19. In April 2020, we produced a [rapid guideline on acute myocardial injury](#) to help non-specialists identify and treat this in people with COVID-19. The guideline recommends diagnostic tests and close monitoring in patients with symptoms suggesting acute myocardial injury.



Symptoms after acute COVID-19 are highly variable and wide ranging. They can include breathlessness, palpitations, chest tightness and chest pain.

In December 2020 we published a [rapid guideline on managing the long-term effects of COVID-19](#), often described as 'long COVID'. The guideline makes recommendations about care for people who have new or ongoing symptoms 4 weeks or more after the start of acute COVID-19. We are using a 'living' approach for the guideline, which means that targeted areas will be continuously reviewed and updated in response to emerging evidence.

Insight from Professor Simon Ray

One of the most important lessons to be learned from COVID-19 is that continued collection of data for the national cardiac registries is essential. The fact that this was done without interruption in many hospitals means that we have an accurate picture of the impact of the pandemic on clinical activity and will be able to track this in the longer term against illness and death.

Already the dramatic reductions in attendances for heart failure and acute coronary syndromes have emphasised both the importance of messaging to the public that the NHS remains open for business and the fact that reductions in clinical services must occur only when strictly necessary and must be as short lived as possible.

What's next for CVD management?

NICE engaged with 20 external stakeholders to identify implementation challenges and available support across the healthcare system while developing this report. These included:

- NHS England and NHS Improvement
- the Getting It Right First Time (GIRFT) programme
- NICOR
- Academic Health Science Networks (AHSNs)
- the British Cardiovascular Society
- the British Society for Heart Failure
- The Pumping Marvellous Foundation
- the British Heart Foundation
- Wirral Community CVD rehabilitation service
- the REACH-HF team.

Two areas with significant gaps in uptake were identified



Care plans for people with heart failure




Cardiac rehabilitation, including for people with heart failure

To help support implementation in these areas, NICE will:

- work with AHSNs to identify suitable projects to address gaps in uptake
- engage with GIRFT to address any joint actions arising from publication of their cardiology report
- continue to engage with NHS England and NHS Improvement to support CVD priorities in the [NHS Long Term Plan](#).

NICE guidance

NICE will continue to expand our [suite of guidance on CVD management](#). New guidance in 2021 will include a guideline on the investigation and management of heart valve disease, and technology appraisal guidance on dapagliflozin for treating heart failure with reduced ejection fraction.

An abstract graphic on a dark teal background featuring a network of white lines connecting various colored dots (blue, green, yellow, purple) of different sizes. The dots are scattered across the page, with some forming larger clusters and others standing alone. The lines are thin and create a web-like structure.

We would like to thank Professor Simon Ray for his contributions to this report. We would also like to thank Nick Linker, National Clinical Director for Heart Disease, and the policy team at NHS England & NHS Improvement, the National Institute for Cardiovascular Outcomes Research Audit Programme, the National Audit of Cardiac Rehabilitation, the Pumping Marvellous Foundation and the British Heart Foundation for their input.

Published February 2021

© NICE 2021. All rights reserved. Subject to [Notice of rights](#).

Any enquiries regarding this publication should be made to:

National Institute for Health and Care Excellence
2nd floor, 2 Redman Place
London
E20 1JQ

National Institute for Health and Care Excellence
Level 1A, City Tower
Piccadilly Plaza
Manchester
M1 4BT

Telephone: +44 (0)300 323 0140

Email: impact@nice.org.uk

Website: www.nice.org.uk