



NATIONAL CARDIAC AUDIT PROGRAMME

Annual report for patients, carers and the public 2021





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About this report

This patient report is designed as a companion to the 2021 National Cardiac Audit Programme (NCAP) report produced by the National Institute for Cardiovascular Outcomes Research (NICOR), which has been carrying out national cardiac audits on behalf of the Healthcare Quality Improvement Partnership (HQIP) since 2011.

The primary aim of NCAP is to support and drive quality improvement within hospitals. For this reason our annual report is aimed at those with some level of clinical knowledge. This patient report is intended to be accessible to all patients, family members, carers and members of the public.

You can download the 2021 NCAP annual report and other key documents at <https://www.nicor.org.uk/national-cardiac-audit-programme/>, covering data from the 1st April 2019 to 31st March 2020.

For some of the measures, three years' data are considered (i.e. 2017/18 – 2019/20).





How to use this report

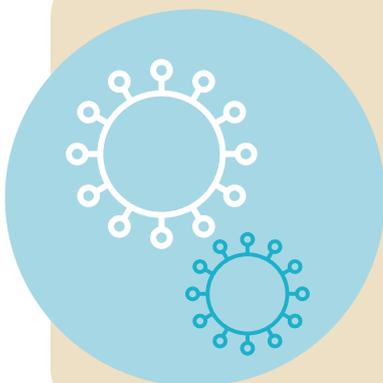
The report is divided into the six areas of clinical expertise (called “domains”) audited by NCAP. We have summarised some of the key findings from the full 2021 annual report, provided useful background information and highlighted what you can do to help improve cardiac health for you and your friends and family. We’ve also included answers to some frequently asked questions and links to further information or support.

Why do we audit hospital services?

The information routinely collected from clinical audit is used for Quality Improvement and Quality Assurance purposes. The audit work we carry out at NICOR helps the National Health Service (NHS) to define the standards used for evidence-based cardiac healthcare and to monitor whether those standards are being met. Where standards are not met, we recommend actions which can help hospitals and medical professionals improve their performance. The report also enables large healthcare organisations and commissioners to look at the national picture.

The national audit data are also very useful for public health research, the findings of which may then become very important for the audit programme. Many discoveries which have improved millions of lives worldwide have been made by analysing patient data, or the patient data have highlighted important areas of clinical research for medical researchers. For instance the links between smoking and obesity and heart disease (among other important factors) were discovered in a study of 35,000 British doctors which ran for 50 years.

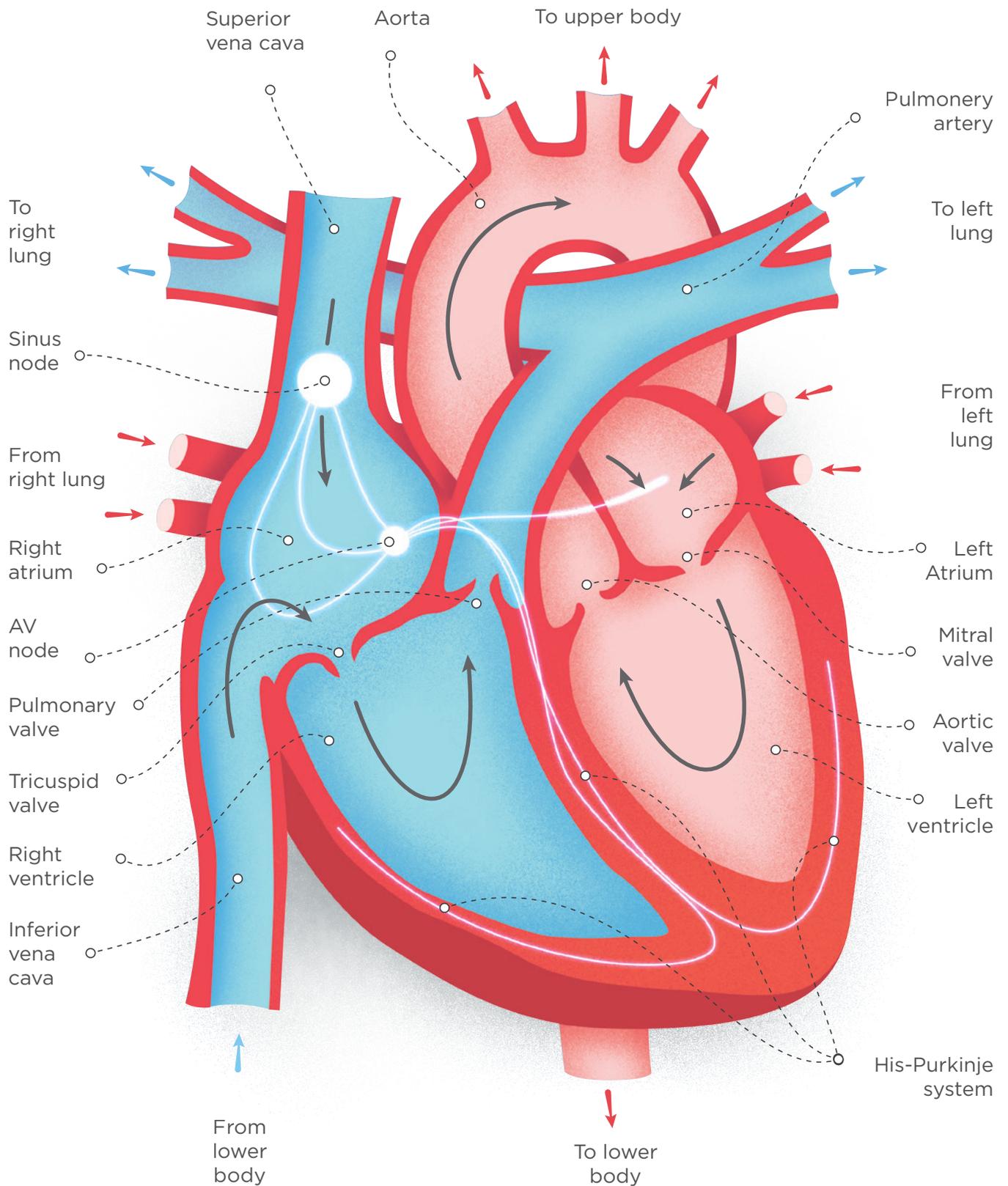
See our infographic on [page 23](#).



COVID-19 and cardiac health and care

During 2020 and 2021 there has been a huge demand on the NHS due to the global COVID-19 pandemic, which started in the UK in January 2020. We published a [report](#) on the impact of COVID-19 on cardiovascular care in September 2020, and we look at some of the findings along with an update covering the second wave of the pandemic on [page 22](#).

An introduction to your heart



Before we explore the different areas of cardiac healthcare or 'specialties' let's take a brief look at how the heart works, which will help us understand how things can sometimes go wrong.

Your heart is amazing. It is the central point of your circulatory system.

The heart is a muscle made of four chambers which pumps blood and oxygen constantly, supplying your whole body, responding to extra demand placed on it, such as vigorous exercise, when needed. The rhythm of your heartbeat is regulated by electrical signals from the heart's 'natural pacemaker', the **sinus node** in the **right atrium**, which make the heart muscle contract and relax at a steady pace to pump the blood.

If either of these systems fails to work properly health problems will occur. If the arteries which channel blood to your heart muscle become blocked either partially or fully you can experience a **heart attack**.¹ The treatment for this includes drug therapy, **percutaneous coronary intervention (PCI)** (a procedure using a balloon and stent(s) to open up an artery) or **cardiac surgery**. Or, if the electrical system is not working properly the rhythm of the heart might be irregular, too fast, too slow or the heart can even suddenly stop beating altogether, which is a **cardiac arrest** (see fact box on [page 17](#)). Both of these cardiac events are a medical emergency and the person must receive treatment fast to maximise the chances of survival.

1 Most heart attacks are due to blockages. However it is now recognised that a small number (up to 10 %) occur due to a temporary constriction of the coronary arteries, small blood vessels or a spontaneous tear in the inner lining of the blood vessels. See 4th Universal definition of an MI figure 4 in section 7.2 <https://academic.oup.com/eurheartj/article/40/3/237/5079081>

Heart failure is the term doctors use for when the heart is no longer able to pump the blood around the body as well as it should. The same expression is used whether there is only mild impairment or the pumping power is very poor – it does not say anything about the severity of the condition. The impaired pumping ability can be for a variety of reasons, such as disease of the heart muscle (known as cardiomyopathy) or the long term damaging effects of high blood pressure, but commonly it occurs after a heart attack when the heart muscle can be permanently damaged.

Cardiac **arrhythmia** is where there is an abnormal heart rhythm. A relatively common form of arrhythmia is atrial fibrillation. This can lead to abnormal flow in the heart chambers, and sometimes results in a clot forming in a heart chamber. If this breaks off into the circulation it can cause a stroke. A number of implantable devices such as **pacemakers** and **defibrillators** and treatments such as **ablation**, a procedure that scars tissue in your heart to block abnormal electrical signals, can be used to regulate heart rhythm.

Finally, babies can be born with structural problems of the heart. These abnormalities are called **congenital heart disease**, and urgent surgery may be required on the baby's heart before the first birthday, and often within the first couple of weeks after birth. Many of these heart problems are discovered through routine antenatal screening offered to pregnant women at 20 weeks of pregnancy or earlier. Where this is possible, it enables doctors to plan treatment of these babies before their mothers give birth, helping to improve their survival rate. However some more minor congenital heart conditions are not detected before birth as they are not easily seen on the scan.



Heart attack (Myocardial Infarction)

With data from the Myocardial Ischaemia National Audit Project (MINAP)

QUICK FACTS



Men are statistically more likely to have a heart attack, and at a younger age. For both the higher and lower risk heart attacks there is a larger percentage of male patients, and the age at which a heart attack is experienced is lower for men (average 66 years old) than women (average 74 years old).



9.7% of patients recorded in the 2019/20 audit were from ethnic groups other than White. Most of the non-White patients whose ethnicity was recorded were from Black and Asian communities, and the average age at which they had their heart attack was significantly younger, 63 years old in comparison with an average of 70 years old for White patients.



Smokers are also more likely to have a heart attack about 10 years younger than non-smokers. 29% of heart attack patients in 2019/20 whose smoking status was known were regular tobacco smokers up until their heart attack. 36% were ex-smokers and 35% had never regularly smoked. The proportion of current smokers was highest in Wales where 34% of heart attack patients regularly smoked in comparison to 31% in Northern Ireland and 28.5% in England.

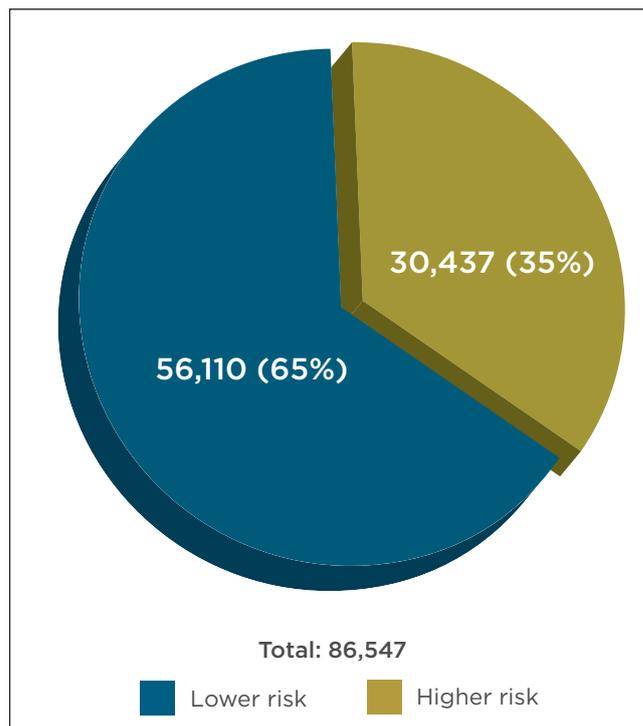


Body Mass Index (BMI) is also a factor. The percentage of heart attack patients with a BMI of 30 or more has increased from 25.8% in 2010/11 to 31.4% in 2019/20.



There was a prior diagnosis of diabetes in 22.7% of heart attack patients who had not been previously diagnosed with coronary artery disease, with 22.1% of men and 24% of women having the condition.

Number of heart attacks in 2019/20 by lower/higher risk type



As explained in the introduction, most heart attacks happen when a coronary artery becomes blocked either partially or fully. This condition is known as acute coronary syndrome. If the blood flow is fully blocked, a particular change is usually seen with a test called an electrocardiogram (ECG), which is carried out as soon as possible, ideally by paramedics called to a patient's home, or immediately on admission to hospital. This type of heart attack carries the highest immediate risk (called a 'STEMI' (ST-Elevation Myocardial Infarction) by doctors after the specific pattern it makes on the ECG) and is an emergency situation (see the infographic on [page 11](#)) requiring urgent unblocking of the artery. The symptoms felt during a heart attack are because damage is being caused to the heart by the reduced blood supply. Delays accessing treatment can reduce the chances of surviving the attack, and increase the chances of further permanent damage to the heart or serious complications.

There is another more common type of heart attack which is less immediately life-threatening, but can lead to serious health problems later on. This is when a coronary artery has suddenly become partially blocked by a clot, narrowed to the point where blood cannot easily pass through. Often the heart will have developed its own protective action to minimise potential damage, but it is vulnerable. When an ECG is carried out, the pattern is different from the higher risk heart attack, and doctors call it an “NSTEMI” (Non-ST-Elevation Myocardial Infarction).

Other tests which can help to diagnose a lower risk heart attack include a troponin test, which measures levels of a heart muscle protein released into your blood when your heart muscle is damaged, or an echocardiogram (‘echo scan’). An echocardiogram is an ultrasound scan which bounces sound waves off different parts of your heart, and uses the echoes to produce an accurate picture of your heart’s structure and function on a screen.

Angiography is a procedure that uses X-rays to check the health of your blood vessels and to assess any blockages to blood flow. This is done by inserting a thin catheter into an artery and injecting a dye which highlights the blood. It helps the cardiologist decide which is likely to be the best treatment for you. If the best option is to use a balloon and stent to re-open a blockage (called a percutaneous coronary intervention ‘PCI’), then this may be done immediately following the angiogram.

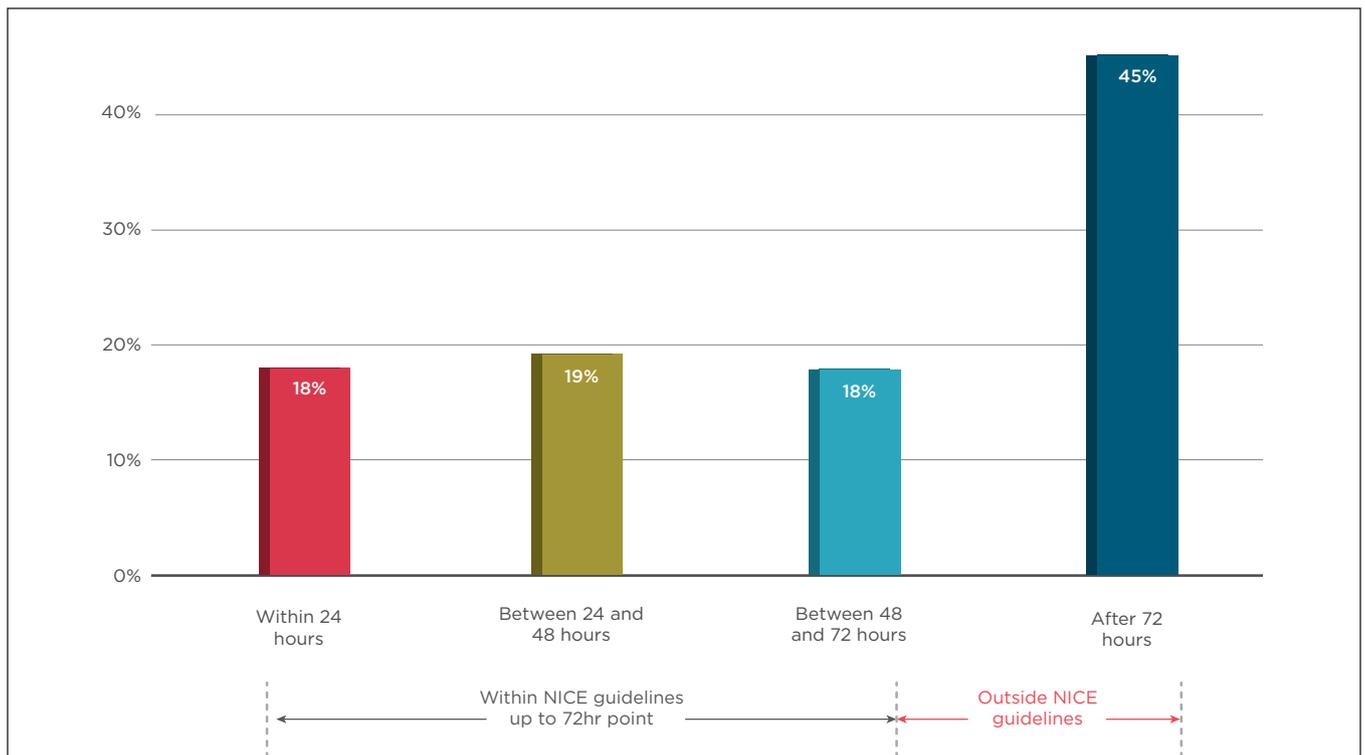
For a higher risk heart attack (STEMI), the angiogram and PCI are carried out immediately on arrival in hospital, as part of emergency treatment. For a higher risk heart attack the delay between admission to hospital and having a PCI is measured in minutes. For a lower risk heart attack, national guidelines (from the National Institute for Health and Care Excellence (NICE)) recommend that an angiogram, and PCI if appropriate, is performed within 72 hours of admission.

Sometimes patients undergo a different form of angiogram either before or instead of the traditional form of angiography. This is called Computerised Tomography (CT) coronary angiography (or CTCA for short). It does not require a thin catheter to be passed up to the heart, and so while it provides information about the health of the coronary arteries, treatment such as a PCI cannot be performed at the same time.

Getting medical attention as early as possible in either case is critical, but particularly for the higher risk type of heart attack.

National and international guidelines suggest that patients with a higher risk heart attack should receive treatment (usually a primary percutaneous coronary intervention (PCI) – see pages 9 and 10) within 90 minutes of arrival at a hospital with a heart attack centre. Half of all patients in England, Wales and Northern Ireland were treated within 40 minutes of arrival in 2019/20.

Time to angiography for lower risk heart attack patients in 2019/20



Half of all patients in England, Wales and Northern Ireland in 2019/20 with a higher risk heart attack, who either called 999 or self-presented at a hospital, received primary PCI in a hospital heart attack centre within **126 minutes** (up from 123 minutes in 2018/19). Scotland is not currently taking part in the MINAP audit. The delay is longer when an inter-hospital transfer is needed, due to the patient first going to a hospital without the facilities or staff to carry out primary PCI.

Place of care and access to specialists is important for heart attack patients, as it is for heart failure patients (see [page 14](#)). With the lower risk type of heart attacks, **61.3%** of patients in 2019/20 were admitted to a cardiology ward, and **96.4%** seen by a cardiologist. **90.9%** of all heart attack patients were discharged home with all drugs for which they were

eligible. **84%** of all patients who were discharged home were referred to a cardiac rehabilitation programme, reflecting a **3%** trend of improvement over the past three years.

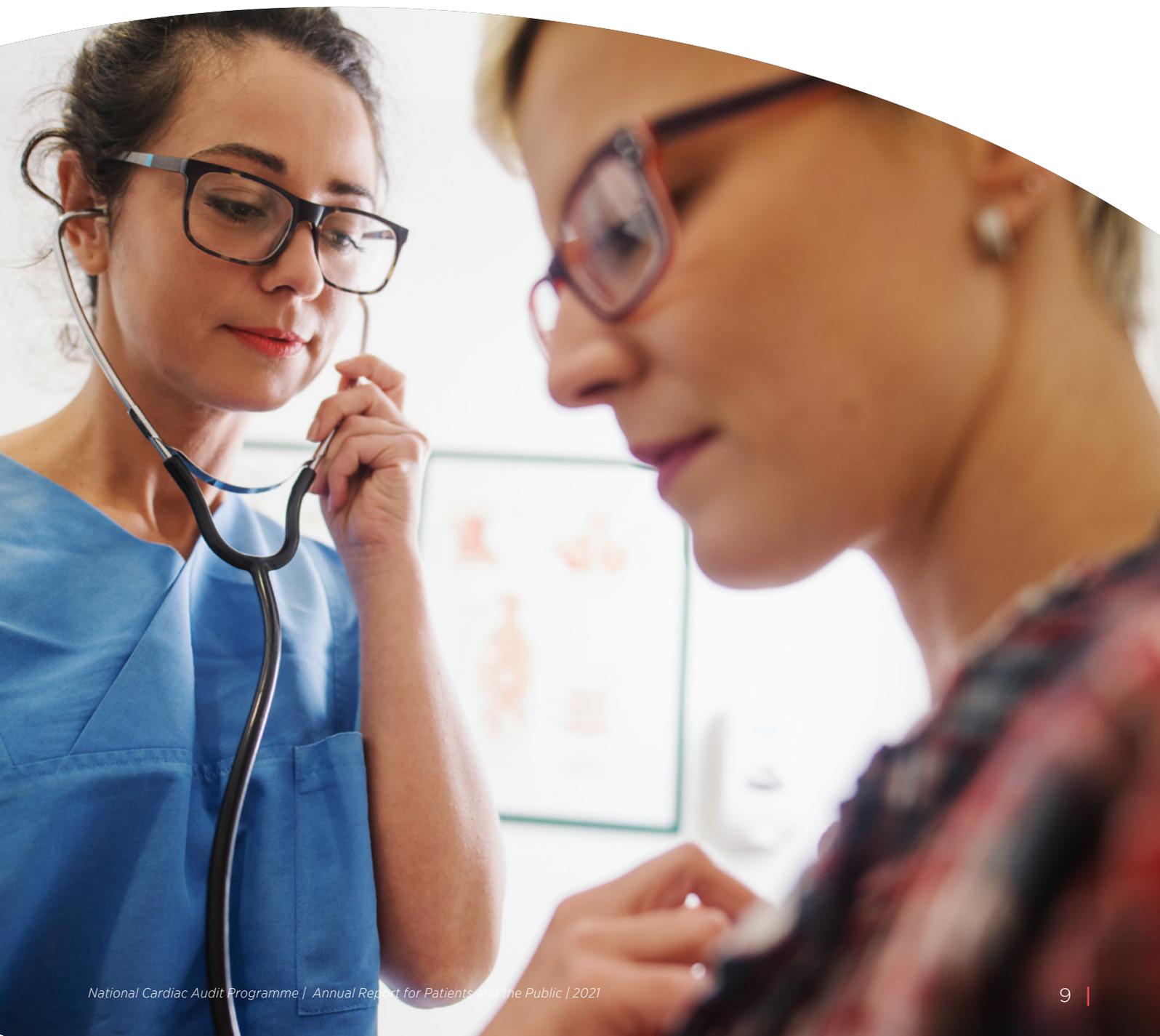
USEFUL RESOURCES FOR HEART ATTACK PATIENTS:

Heart UK (cholesterol charity)

<https://www.heartuk.org.uk/>

<https://www.nhs.uk/conditions/heart-attack/recovery/>

<https://www.bhf.org.uk/informationsupport/conditions/heart-attack>



Percutaneous Coronary Intervention

(PCI) With data from the National Audit of Percutaneous Coronary Interventions (NAPCI)

QUICK FACTS



Overall there were 100,112 PCI procedures (3% less than two years ago) performed for patients in the UK in 2019/20. These were carried out in 119 PCI centres.



Rates of PCI in 2019/20 fell from the rates in 2018/19 in England (by 0.8%) and Scotland (by 1.8%) but rose in Wales by 1% per million people and Northern Ireland by 1.3%.



PCI has become the preferred method to treat high risk heart attacks ('STEMI') in the last 18 years. When PCI is used for this treatment it is known as 'primary PCI' or 'PPCI'.



The average age of a patient undergoing PCI is 65.7 years and 73.9% are men. 28.7% of patients having a PCI in 2019/20 had previously had the same procedure. 10% of patients are Asian and 1.2% are Black.



10% of patients are from Asian and 1.2% are from Black ethnic groups.

If you experience a high risk heart attack, the preferred treatment in the UK is emergency or **primary PCI** (also known as **primary angioplasty**) to restore blood flow to the heart as soon as possible to stop further damage. On [page 7](#) we saw how the heart attack diagnosis is made by performing an **ECG**. Another important reason for calling an ambulance rather than taking yourself to your local hospital's Accident & Emergency (A&E) department is that if a heart attack is suspected this test can often be carried out by paramedics at your home. This ensures not only that you are taken to the correct hospital (a heart attack centre – see below) but also that they will be warned you are on the way, saving precious time so that you can undergo the most appropriate treatment as quickly as possible.

The ambulance will normally take you to a hospital which is a heart attack centre where this procedure is performed regularly (which may not be your local hospital). This is because larger or specialised hospitals tend to have better facilities such as a 24 hour service, a dedicated treatment room (a 'cath lab') as well as a clinical team who are used to seeing heart attack patients and performing the PCI procedure as an emergency treatment day and night.

If you present yourself at the nearest A&E with symptoms of a heart attack you will often have to wait longer for treatment as the diagnosis will first need to be confirmed and, if there are no available facilities on site, you will need to be transferred by ambulance to the nearest hospital which can perform the PCI procedure, causing unnecessary delay to you getting the treatment you need.

Once you arrive at the hospital cath lab, a fine tube, known as a catheter, is passed to your heart arteries under local anaesthetic to find out where the blockage is. Then a balloon and wire mesh 'stent' will be used to open up the blockage and restore blood flow to your heart muscle. The catheter can be inserted from either a blood vessel in your groin (femoral artery) or your wrist (radial artery). The use of the wrist is associated with fewer complications including reduced bleeding. As a result there has been a trend towards using this access in the last decade with **89.5%** of PCIs being carried out through the wrist rather than the groin in 2019/20. This has steadily risen each year from only 10.2% in 2004. It will never be 100% because for some patients the



catheter



balloon



stent in artery

groin is the best entry point. It is estimated that 450 lives were saved due to the use of the radial artery for PCI in the period 2005 – 2012.

Once a balloon has restored blood flow, a stent (a tiny scaffold which helps hold open the artery) is then put in place and will remain there. Other technological advances have been made, and most stents are now 'drug eluting', containing specific drugs which minimise the risk of the artery renarrowing due to scar tissue growing around the stent as the artery heals.

PCI for patients who have had a lower risk heart attack

National and international guidelines recommend that patients within this category should receive PCI if suitable within 72 hours of admission to hospital. In 2019/20 this target was achieved for **54.2%** of eligible patients and **66.8%** had received PCI within 96 hours.

Day case PCI – when you don't need to stay in hospital overnight after a non-urgent procedure

PCI techniques have improved so the procedure is generally less invasive and with less risk of complications than in the past and it's often possible and safe to have the procedure and go home the same day. It will depend on your condition and where you have the procedure as some hospitals still prefer to keep an eye on patients overnight.

In 2019/20 (latest data available) **67.9%** of elective PCI procedures were performed as day cases.

USEFUL RESOURCES FOR PCI PATIENTS:

<https://www.bhf.org.uk/informationsupport/publications/treatments-for-heart-conditions/angioplasty---your-quick-guide>

<https://www.nhs.uk/conditions/coronary-angioplasty/>

<https://www.bcis.org.uk/public-information/>



A HEART ATTACK IS A MEDICAL EMERGENCY

Call 999 urgently for an ambulance which will take you to the best available treatment centre. Do not attempt to take yourself to hospital. Fast treatment could save your life.

HEART ATTACK SYMPTOMS

- Sudden pain, pressure or discomfort in your chest that doesn't go away.
- The pain may radiate to one or both arms or your neck, jaw, back or stomach. This can be severe for some people, and others simply experience discomfort.
- You may also start to sweat, feel sick, breathless, faint, dizzy, or a sense of panic.

It's possible to have a heart attack without experiencing sudden chest pain – this is more common in women and people with certain conditions which affect how pain is experienced.

You can read more about heart attack symptoms [here](#).



Adult Cardiac Surgery

With data from the National Audit for Adult Cardiac Surgery (NACSA)



QUICK FACTS



A total of 31,046 cardiac operations were performed in the UK during 2019/20.



13,932 first time coronary artery bypass graft (CABG) operations were carried out in 2019/20.



For all cardiac surgery (of any type), including emergencies, the survival rate in 2019/20 was slightly over 97.5%, which has risen from 96% in 2006/07.



On average, the survival rate for patients having a non-emergency CABG in 2019/20 in the UK was just over 99% of patients.



5,056 first time aortic valve replacement (AVR) operations were carried out in 2019/20, with a further 2,596 carried out in combination with a coronary artery bypass graft operation (AVR + CABG).



The average age for a patient undergoing cardiac surgery in the UK in 2019/20 is 66.2 years old and 74.2% are men, with only a quarter of patients female.

Adult Cardiac Surgery includes all procedures performed on patients aged 18 or over that involve the heart or structures attached to the heart (see diagram on [page 5](#)). For the purposes of the audit these operations involve opening the chest wall (via the breastbone or ribs) and usually the pericardium (the sac around the heart). Heart operations include Coronary Artery Bypass Grafts (CABG); valve replacement or repair; aortic surgery (surgery on the body's main artery); or a combination of these. Procedures on the heart not requiring the chest to be opened surgically and surgical procedures on babies and children are reported elsewhere in this report.

A CABG operation treats patients who have angina (chest pain) as a result of a narrowing or blockage in their coronary arteries. This involves taking a healthy artery or vein from elsewhere in the body and surgically joining (grafting) it to the affected

coronary artery above and below the point of narrowing, allowing blood to flow around ('bypass') the blockage and reach the heart muscle without restriction.

A CABG is occasionally performed as an emergency operation straight after the patient has been diagnosed with a heart attack. However, following most heart attacks it is more usually performed as an urgent in-patient surgery scheduled several days after the initial angiogram (see Heart Attack on [page 7](#)). For patients with more stable symptoms of chest pain, then the operation is usually performed on an elective basis, where the patient is admitted from home for their operation in a planned fashion.

Generally at the time of a heart attack you will be given **anti-platelet drugs** which thin your blood and reduce clotting to counter the effects of the narrowed or blocked artery. This often means that it could be more dangerous to operate during the first few days after stopping these drugs, due to the increased risks of bleeding with surgery. So there needs to be a waiting period before an operation (commonly 5 days, depending on which drugs have been used). Also, a cardiac surgery patient will need to be kept on an intensive care ward after the surgery which needs to be coordinated and planned with care.

On average in the UK it takes **11 days** for a patient identified by angiography as having an urgent need for the **coronary artery bypass grafting** surgery to have the operation. National guidelines are that it should be carried out within 7 days. In England **34%** of patients receive their operation within this time, with **28%** in Scotland, **17%** in Wales and only **6%** in Northern Ireland doing so, however there has been a **5%** improvement in NI since 2018/19 and **3%** improvement in Scotland.

For elective CABG surgery the average UK waiting time for a suitable patient from their angiogram to the operation is **104 days**. This has been increasing.

Patients stay in hospital for an average of **7.8 days** after their operation in England, compared with Scotland (8.3 days), Northern Ireland (8.5 days), and Wales (9.2 days).

FACT BOX: MITRAL VALVE SURGERY

The mitral valve lies between the left atrium and the left ventricle of the heart (see our diagram on [page 5](#)). It consists of two flaps which open and close as pressure changes during contraction of the heart chambers. Normally blood flows through the open mitral valve into the left ventricle and when closed blood is prevented from flowing back into the left atrium. There are several problems which can occur with the mitral valve and which may require surgery. Mitral regurgitation is when the valve does not close properly and blood flows back into the left atrium. Mitral stenosis is the narrowing of the mitral valve opening. Mitral prolapse is where the valve is too floppy and does not close properly.

There are two types of surgery that are measured in the audit. A **mitral valve repair** is usually carried out to treat mitral prolapse or regurgitation. The flaps of the valve are sewn closer together so that blood does not flow back through the valve after closing. This can sometimes be done as keyhole surgery which is less invasive. A **mitral valve replacement (MVR)** is open heart surgery to replace the damaged valve, where it is not able to be repaired, with either a mechanical or animal tissue valve. Sometimes the surgery is carried out at the same time as a CABG.

In this year's NACSA report, there is a focus on patients undergoing mitral valve operations. In 2019/20 there were **1375** first time mitral valve repairs performed, with a further **281** in conjunction with CABG surgery, and **858** mitral valve replacement, with another **214** in conjunction with a CABG. These include higher risk emergency surgeries.

The survival rate for mitral repair is high and has been stable for the past 5 years at just under **99%**. The rate in 2019/20 for mitral replacement is **95.4%**. Patients undergoing MVR & CABG as a combined operation are often higher risk and not suitable for a repair which is reflected in the lower survival rate with rates between **89%** and **92%** over the last 5 years.

USEFUL RESOURCES FOR ADULT CARDIAC SURGERY PATIENTS:

<https://www.bhf.org.uk/information-support/treatments/coronary-bypass-surgery>

<https://www.rcseng.ac.uk/patient-care/recovering-from-surgery/coronary-artery-bypass/>

<https://www.bhf.org.uk/information-support/heart-matters-magazine/medical/valve-disease>

<https://www.bhf.org.uk/information-support/conditions/aortic-aneurysm>

Heart Failure

With data from the National Heart Failure Audit (NHFA)

QUICK FACTS



69,556 patients were recorded as being admitted with symptoms of acute heart failure between April 2019 and March 2020. The last month of this period saw the first wave of the COVID-19 pandemic which caused a reduction in data entry possibly due to hospital staff being redeployed. However, this number is estimated to represent more than 80% of all patients admitted with heart failure.



82% of patients were seen by heart failure specialists. This figure is unchanged from 2018/19.



86% were given an echocardiogram (See Heart Attack section, [page 8](#) for details of this test). This is a decline of 1% from 2018/19.



96% were given an electrocardiogram (ECG).



The average age of heart failure patients (men and women combined) is 81. Men outnumber women in every age group except those older than 85, and the average age of admission was younger for men at 76.5 years old to 80.8 for women.



The rate of UK heart failure patients who die in hospital is 9%. Risk of dying in hospital varies with age, at 4.9% for those younger than 75 and 10.9% for the over 75s.



After 30 days from discharge the survival rate of patients is 85% and 1 year from discharge it is 68%, but this can depend on a number of factors. Many patients with mild or moderate heart failure can survive many years if they are given the right treatment.

Heart failure (see also the description in the introduction on [page 6](#)) occurs for a number of reasons. It is often a secondary effect of other heart problems such as a heart attack, when the heart muscle is damaged, damage caused by the increased strain on the heart from high blood pressure, or cardiomyopathy, which is a disease of the heart muscle, as well as other causes. It essentially means that the heart is failing to pump as well as it should and can cause symptoms such as weakness, breathlessness, fatigue and swelling around the legs. It cannot be cured but in many cases patients can manage their condition with drugs and other therapies.

Heart failure can be missed or confused for other conditions, even in hospital. Patients are sometimes treated on a general medical ward for the whole of their stay, even when their heart failure has been diagnosed.

The audit also looks at the survival rates for those discharged from hospital after staying less than one day. At 1 year after leaving hospital **77%** of these patients are still alive, which indicates that they are a lower risk group of patients (when the overall rate from the time of admission is **68%** after one year).

Specialist Care and Place of Care

'Specialist care' can either mean a Consultant Cardiologist, another Consultant with specialist Heart Failure interest (usually a Care of the Elderly Physician) or a Heart Failure specialist nurse (some patients are seen by more than one of these). Patients treated by specialists regardless of place of care are more likely to receive key tests like ECGs and echocardiograms (**90%** of those treated by specialists received an echocardiogram compared to **69%** if not seen by a specialist team, a **21%** difference) which help cardiologists see the heart's reduced function, and determine the best treatment. This might be surgery or an implantable device (see Arrhythmia/Cardiac Rhythm Management on [page 16](#)). They are also more likely to receive the appropriate triple drug therapy (see below), offered at follow up out-patient appointments (which is associated with a **77%** survival rate after 1 year, compared to **61%** for patients who did not receive these), and to be referred to a tailored cardiac

rehabilitation programme (which has been shown to help cardiac patients recover and lead as full a life as possible with their condition). This is associated with a **78%** survival rate after 1 year versus **68%** for those not referred for cardiac rehabilitation. This is possibly because patients were selected for rehabilitation based on their individual ability to benefit from the programme. The rate of cardiac rehabilitation continues to be a key area for improvement with only **15%** of heart failure patients referred in 2019/20, a slight rise from 2018/19 when **13%** were referred.

The place of care in hospital is also key to the treatment of Heart Failure patients. Only **43%** of these patients are admitted to a cardiology ward (down **2%** since 2018/19 and **6%** since 2014/15). Patients admitted to a cardiology ward have a higher survival rate in hospital (**94%**) than those on general medical wards (**91.4%**) and those on other wards (**86.8%**). After one year, patients admitted to a cardiology ward are more likely to still be alive (75% of these patients) than patients treated on a general medical ward or other ward. Again, those on cardiology wards are more likely to receive appropriate therapies and referrals.

Drug therapy for heart failure

There are three drugs recommended for heart failure. A patient not discharged on any of these drugs has a significantly lower chance of still being alive a year on from discharge from hospital for heart failure (**48%** for the most common form of heart failure) than a patient discharged on all three drugs (**82%**).

The three drugs are:

ACE Inhibitors/ARBs (prescribed to 84% of patients with the most common form of HF in 2019/20)

These drugs (angiotensin-converting enzyme inhibitors/angiotensin receptor blockers) affect an enzyme (angiotensin-converting enzyme) in your blood which can narrow your blood vessels, increasing your blood pressure and making your heart work harder to pump blood around your body. Taking this drug can often ease this narrowing of the vessels and lower your blood pressure. Watch this video from the British Heart Foundation <https://youtu.be/xllaQuRaZmk>

Beta blockers (prescribed to 90% of patients with the most common form of HF in 2019/20)

Beta blockers block the action of the stress hormones adrenaline and noradrenaline which cause your heart to beat faster. This slows your heart rhythm and reduces the demand on your heart. Watch this video from the British Heart Foundation <https://youtu.be/uiYJKvwVhEU>

MRAs (prescribed to 56% of patients with the most common form of HF in 2019/20)

These drugs (mineralocorticoid-receptor antagonists) have a diuretic effect, important in heart failure where fluid is frequently retained, and also reduce levels of the hormone aldosterone, which raises your blood pressure and can cause other heart and kidney problems.

USEFUL RESOURCES FOR HEART FAILURE PATIENTS:

The Pumping Marvellous Foundation
<https://pumpingmarvellous.org/>

Heart Failure Matters
https://www.heartfailurematters.org/en_GB/

Cardiomyopathy UK (for diseases of the heart muscle) <https://www.cardiomyopathy.org/>

Arrhythmia (Cardiac Rhythm Management)

With data from the National Audit for Cardiac Rhythm Management (NACRM)

QUICK FACTS



The first pacemaker implantation was performed in 1958.



174 hospitals in the UK reported carrying out device implantation and 61 reported carrying out ablations in 2019/20.



There were 31,407 pacemakers implanted for the first time in England in 2019/20. This is equivalent to 558 per million people.



There were 19,770 ablations carried out in the UK in 2019/20.

An arrhythmia is a disorder of the heart rhythm, and cardiac rhythm management is the treatment. As we saw in the introduction on [page 6](#), the pumping of your blood around your body is controlled by the powerful electrical conduction system in your heart. If there is an irregular rhythm (arrhythmia) this can cause serious problems, even leading to sudden cardiac arrest (SCA) where the heart stops completely, which without medical attention on the scene is often fatal. Many arrhythmias are manageable with medication or technological solutions such as pacemakers or implantable cardioverter defibrillators (ICDs) to regulate the rhythm of the heart, and modern techniques such as ablation, where the problem electrical pathways are destroyed so they cannot influence the heart's rhythm.

FACT BOX: TYPES OF DEVICES

The most common type of device implant is the pacemaker, which is a small device, usually implanted just under the collar bone, with one or more leads threaded down a vein to connect to the heart, which artificially takes over the function of your heart's natural pacemaker, the sinus node. It works by continually monitoring the rhythm of your heart and when necessary can trigger the heartbeat at the correct rate, to prevent it going too slowly or stopping altogether. Technological advances have led to the development of more complex devices, such as implantable cardioverter defibrillators (ICDs) which can shock the heart into a regular rhythm, if it develops a chaotic rhythm (ventricular fibrillation). Most ICDs can also function as pacemakers. There are also cardiac resynchronisation therapy (CRT) devices which are often used to treat heart failure, when the heart becomes enlarged and contraction happens at different times on each side.

The majority of patients fitted with a pacemaker (over 90%, meeting national NHS guidelines) receive a dual chamber pacemaker, where there are two leads fitted as described above, one in the right atrium and one in the right ventricle (see diagram of a heart on [page 5](#)). There are some patients for whom this type is not suitable due to frailty or anatomical reasons so the figure will never be 100%.

Most patients with pacemakers and other devices need no further procedures throughout the many years until the battery needs changing. However, occasional complications can arise in the first weeks or months after the implant procedure, and these may need to be corrected with a further procedure (such as repositioning of a lead that has become dislodged in the first few days, or removal of the device due to infection).

In the UK, we have found that following a first pacemaker implant, 4.3% of pacemaker patients (2018/19 data latest available) require another procedure within a year, usually because of a complication. For complex devices (ICD and CRT) in 2018/19 this figure was 6.0%.

Depending on the type of device and the patient, most device batteries last for 6-10 years. A few months prior to the battery running out, the entire device is replaced and connected to the existing lead(s) - this is known as a **'box change'**.



FACT BOX: SUDDEN CARDIAC ARREST

As we saw in the introduction on [page 6](#), electrical signals sent by the system which powers your heart keep it beating and blood pumping around your body. If this system completely stops working for any reason, such as a chaotic abnormal heart rhythm developing, blood will stop being pumped and your brain is starved of oxygen, and you will become unconscious. You will often stop breathing.

Cardiac arrest is described by the British Heart Foundation as “the ultimate medical emergency”. This is especially so if it happens outside hospital. A few minutes of giving the right treatment can literally be the difference between life and death. Some arrhythmias can be fatal – ventricular tachycardia (VT) or ventricular fibrillation (VF). When this happens the heart rhythm becomes chaotic and rapid. Without the intervention of **cardiopulmonary resuscitation (CPR) and the use of an automated external defibrillator (AED)** the person is likely to die suddenly and unexpectedly.

CPR provides a 9% chance of survival. When the person suffers ventricular tachycardia or ventricular fibrillation, however, the only chance of survival is with CPR + AED which provides more than a 50% chance of survival. Only with an AED shocking the heart rhythm back to normal will the person survive a sudden cardiac arrest.

It is vitally important that both CPR + AED are used in these circumstances and everyone should make themselves aware of their nearest AED. For every minute that passes whilst a person is in VF or VT they have 10% less chance of survival. Therefore, whilst waiting for paramedics to arrive it is important to perform CPR and use an AED to save a life.

Check for a pulse and observe whether the person appears to be breathing, call 999 as soon as you can and ask for an ambulance immediately and they will advise where you can find the nearest AED, or see the link on [page 24](#) if you want to find out where the nearest one is to your workplace or home. There is also a link to find out where you can learn CPR. Not all AEDs are listed with local ambulance services so it is important to familiarise yourself with your nearest AED and also to contact the local ambulance service. You can also search at www.defibssavelives.org

USEFUL RESOURCES FOR PATIENTS WITH ARRHYTHMIA:

Arrhythmia Alliance

<http://www.heartrhythmalliance.org/aa/uk>

<https://www.bhf.org.uk/informationsupport/conditions/abnormal-heart-rhythms>

Sudden Cardiac Arrest

<https://www.suddencardiacarrestuk.org>



Richard's story – Pacemaker

Richard is a patient representative for NICOR.

My world changed in 2002. At the time I held a responsible job and the pressure was high. I had always had a heart murmur and occasionally I would have minor palpitations maybe once every 4 or 5 years, usually when I was under pressure. I noticed these were getting more frequent and I was getting short of breath quite frequently. I had not seen my GP for a few years and decided it was now time to make an appointment.

I arrived and met the young doctor who told me she was training to be a GP. This turned out to be a piece of luck. She took her time and gave me a full verbal grilling and a full examination followed by an ECG. She told me she thought I had a heart problem which needed further tests. She brought the senior partner in and he agreed, and suggested that he refer me to the hospital which at that time housed the cardiac department, and it would take about a month or so as he wanted the lead cardiologist to see me. I told him I had a high level of private medical insurance through my employer if that would be quicker, as I began to realise that could be serious.

Driving home I thought they had an idea of my problem and would not tell me until it was confirmed. On arriving home, the telephone was ringing and I answered it to find it was the specialist's secretary who said he had a cancelled appointment at 11.30 and would I like it?

The paperwork for the insurance company was completed and I was examined and questioned about my own medical history and that of my parents and grandparents. My mother was still alive but in a care home suffering with Alzheimer's and her parents had both lived into their late eighties with no heart problems that I was aware of. My father had died some fifteen years earlier of stomach cancer. But he had been diagnosed with emphysema and suffered from palpitations for many years. He was not suitable for surgery because of his poor lung capacity. His mother had died of a cardiac arrest in 1940

and his father died a year later. He had breathing problems for many years and at the time this was put down to his being gassed during the First World War. I was told by the consultant that he thought I might have hypertrophic cardiomyopathy (HCM) which did concern me as a friend had sadly died of cardiomyopathy at the age of 22 several years earlier, although his condition was dilated cardiomyopathy. I would need more tests to confirm it which would be carried out at the Battle Hospital (NHS) the next day.

After an echocardiogram and a tread test (where your heart rate is measured as you exercise on a treadmill) he confirmed HCM and told me my breathing problems were due to a low ejection fraction (the percentage of blood pumped out of the left ventricle with every contraction) and that I had HCM, heart failure and atrial fibrillation (AF). He told me his definition of HF is that the heart is failing to pump at its full capacity. He also explained that there are two types of patients in his opinion; those who do what they are told to the best of their ability and those who question everything and take an interest and learn about their condition, and from my questions he had concluded I am in the latter group and they tend to live longest. He also believed I could reach my three score years and ten, and he was right as I reached it last year.

I was put on a drug regimen and I improved for about a year but when my breathing gradually worsened, I was transferred to the care of Professor McKenna at the Heart Hospital in London and was programmed for surgery to remove the obstruction causing my low ejection fraction. The operation was carried out at the Harley Street Clinic in November 2004, it was a success and I would later feel much better. In fact better than I had felt for years, but after the surgery I felt dreadful in the ITU and hoped they shot the horse who must have kicked me in the chest.

During the three-day period after my surgery, my heart was beating at over 250 beats per minute, and I

felt much better when it reverted to a normal rhythm by itself. I had regular appointments at the Heart Hospital for the next six months and my medication was reviewed and adjusted, and eventually I was returned to local care. Like many patients who live long term with HF I had good times and bad times. It's a bit like a wave pattern; you gradually go downhill and a change of medication sends you back up, not perfectly but with a reasonably good quality of life. The surgery had made a huge difference to me – my breathing improved and I was able to cut down on my medication in consultation with my doctor. I was able to exercise better and my wife and I were even able to resume a favourite pastime: walking. We were able to start with short circular walks of a mile or two on fairly level ground and progressed to a walk of about seven miles in the Scottish Highlands.

By the end of 2012, after eight good years, things began to go haywire, I was going into and out of atrial fibrillation (where the heart rhythm is irregular and dangerously fast) several times a day and I can honestly say I have never felt so bad and the frequency was increasing. A Bivent pacemaker was fitted and I underwent cardiac ablation to my atrioventricular node in Feb 2013. I did not rush into this move as it was explained that should the pacemaker fail there was no back up and unless I was close to a hospital it could be terminal. I have lived my life with data being important both in my work and life generally, and the data told me I should go ahead. It's a decision I have never regretted. Back to feeling good and enjoying a good quality of life for several years. Then back to the old pattern – another problem arises and you go downhill until a change of treatment improves how you feel.

What of the future? Well now my heart has thrown another curved ball at me as ventricular tachycardia (VT – a fast, abnormal heart rate, see the Sudden Cardiac Arrest fact box on [page 17](#)) has raised its ugly head, but in the words of the song we will overcome. In retrospect I have had fantastic treatment both privately at the beginning and by the NHS more latterly; as well as by my long-suffering consultants and GPs who I thank most heartily. My pacemaker showed that I only had a short time left on the battery, and this was replaced during the COVID-19 pandemic, but thankfully not at its height!

The new pacemaker I received is even more hi-tech and links to my Wi-Fi and to other equipment by bluetooth and sends regular reports into the hospital.

To sum up: my experience of HF is that a good quality of life is possible with good, well managed care. I have contacts with many patients and I regret to say that many of them do not receive the same quality of care that I have experienced.

- Why the post code lottery?
- Why aren't all patients getting treatment which follows NICE guidelines?
- Why are cost effective Heart Failure Specialist Nurses not available to all HF patients when they are needed?

You can read about these things in the National Cardiac Audit Programme reports and it is why I feel the work I do with NICOR is so important.

Richard Corder

Congenital Heart Disease

With data from the National Congenital Heart Disease Audit (NCHDA)

QUICK FACTS



13 babies a day are born with a heart or circulatory condition, affecting 1-2% of the UK population.



20-30% of babies with congenital heart disease have severe CHD which is life-threatening and requires surgery in the first year of life.



There were 8,286 procedures on children under 16 in 2019/20 for congenital heart disease.



In total there were 12,393 congenital heart disease procedures on children and adults in 2019/20.



The 30 day post-surgery survival rate for children under 16 having a surgical procedure for congenital heart disease is 98% in 2019/20.

Many heart problems develop during a person's lifetime and are influenced by lifestyle as well as genetics but some, called congenital heart disease, are present from birth and develop in the womb.

As a new or expectant parent this will obviously be a frightening thing to hear, but techniques, care and understanding have advanced significantly over the past few decades so that the vast majority of babies survive well into adulthood with a good quality of life. Some congenital heart disease problems self-correct over time (such as a small ventricular septal defect (a type of hole in the heart)), and others do not need surgery and can be monitored and managed with medications if necessary.

Research has shown that congenital heart disease is managed better when it can be diagnosed before birth, at the routine scan offered to all pregnant women at 20 weeks. The heart's structure has developed as early as 10 weeks of pregnancy and most major problems with the structure of the heart can often be detected with the ultrasound scan at the 20 week scan or even earlier.

ANTENATAL DETECTION

51% of children needing a procedure before one year of age had their condition diagnosed antenatally

Transposition of the great arteries with intact ventricular septum (TGA-IVS)

76% of children needing a procedure before one year of age were diagnosed antenatally

Hypoplastic Left Heart Syndrome (HLHS)

92.3% of children needing a procedure before one year of age were diagnosed antenatally

Complete Atrioventricular Septal Defect (AVSD)

56.4% of children needing a procedure before one year of age were diagnosed antenatally

Tetralogy of Fallot

67.2% of children needing a procedure before one year of age were diagnosed antenatally

For children who go on to need a procedure in the first year of life, **51%** of their congenital heart problems are currently picked up by the scan.¹

As a baby grows in its mother's womb a number of congenital heart conditions can develop. A few of these are:

Hole in the heart – this is where there is an opening in the wall that separates either the filling chambers (atria) or pumping chambers (ventricles) of the heart (or both). The most common types are an atrial septal defect (ASD) where there is a hole between the right and left atria, or a ventricular septal defect (VSD) between the right and left ventricles. These holes affect the flow of blood through the heart so

¹ It is important to bear in mind that the Congenital Audit only publishes the success rate of detection before birth of congenital heart conditions found during ultrasound scans by sonographers linked to obstetric units at local hospitals, and only in those children who have survived pregnancy and have then required a procedure in infancy. The results underestimate national and local success in detecting cardiac conditions in the womb, as they do not include other possible outcomes following antenatal diagnosis, such as termination of pregnancy, or the child not undergoing a heart procedure in infancy.

that extra blood goes into the lungs and, if large, may lead to breathlessness and failure of the baby to grow. Not all holes will need treatment and some small ones will close on their own in time (up to 20 years). However if surgery is needed it is generally in infancy or early childhood, whilst some holes can be closed using a transcatheter device ('keyhole' procedure), usually by mid to late childhood. There is a need for subsequent monitoring through life, although further procedures are unlikely to be required later in life if no other congenital heart condition is present.

Hypoplastic left heart syndrome (HLHS) – a relatively rare condition where the left side of the heart does not fully develop, and is much smaller. Multiple surgical procedures may be required in infancy and early childhood. It is often able to be detected in pregnancy, and **92.3%** of the babies with this condition who had to have a procedure before one year of age had their condition detected before birth in 2019/20 in the UK and Republic of Ireland. This has risen over the last decade from **69.5%** in 2010/11.

Transposition of the great arteries with intact ventricular septum (TGA-IVS) – in a healthy heart the pulmonary (lung) artery is connected to the right pumping chamber (right ventricle) which pumps the blood to the lungs, whilst the left pumping chamber (left ventricle) pumps the blood around the body through the aorta (the body's main artery). However, in this condition they are switched, and both great arteries are connected to the wrong pumping chambers. This means that the blood being circulated around the body is low in oxygen and the baby is 'blue' at birth. It's likely that the baby will need an operation in the first couple of weeks of life. Again, this condition is often visible on an ultrasound scan at 20 weeks of pregnancy. In 2019/20 **76%** of babies with this condition, who had to have a procedure before one year of age, had it detected before birth in the UK and Republic of Ireland. This has risen over the last decade from **25%** in 2010/11.

Complete Atrioventricular Septal Defect (AVSD) – this is where there is a hole between the right and left side of the heart in the centre, between the atria (the upper chambers where blood enters the heart) and also between the ventricles (pumping chambers). This means that the pumping of oxygenated blood to supply the rest of the body is impeded. It is a condition often seen in babies with trisomy 21 (Down's Syndrome). In 2019/20, **56.4%** of babies with this condition, who had to have a 'corrective' procedure before one year of age, had it detected before birth in the UK and Republic of Ireland. This has risen over the last decade from **39%** in 2010/11.

There can also be combinations of structural problems in different areas of the heart.

Tetralogy of Fallot (TOF) – is a combination of four structural heart abnormalities. It involves a narrow pulmonary (lung) valve/artery, impeding the supply of blood to the lungs, an enlarged right ventricle (see the diagram of a heart on [page 5](#)), along with a large hole (ventricular septal defect – VSD) between the right and left ventricles, which are the two main pumping chambers. The entrance to the aorta, which supplies blood to the rest of the body (see [page 5](#)), is found next to the hole with this condition, meaning that blood low in oxygen flows through it mixing with the oxygenated blood and causing the level of oxygen in the blood to be lower than normal. This condition normally means the baby will need to have an operation before the age of one year, and how early in life this is depends on how severe the narrowing of the pulmonary valve/artery is. In 2019/20 **67.2%** of babies in the UK and Republic of Ireland who had to have a 'corrective' procedure within one year of birth were diagnosed with the condition in the womb. This has risen over the last decade from **29.8%** in 2010/11.

The overall survival rate for the 4,326 surgical operations undertaken in children under 16 years of age in 2019/20 is **98%**, and remains among the best reported anywhere in the world. However, assessing the likely survival rate for a specific congenital heart problem at a particular centre with its clinical team is more complex. To estimate the likelihood for each hospital the congenital heart disease audit programme uses a risk-based calculation to take into account the type of congenital heart disease as well as non-cardiac patient factors, such as genetic abnormalities and how sick the child is just before the operation, as these all influence the outcomes after a given procedure. You can read more about this and view the risk adjusted survival rates for all UK congenital heart disease centres [here](#).

USEFUL RESOURCES FOR CONGENITAL HEART DISEASE PATIENTS:

Tiny Tickers
[Home - Tiny Tickers](#)

Children's Heart Federation
<http://www.chfed.org.uk/>

Little Hearts Matter <https://www.lhm.org.uk/>

The Somerville Foundation (adults with congenital heart problems)
<https://thesf.org.uk/>

Antenatal Results and Choices
<https://www.arc-uk.org/>

COVID-19 and its impact on cardiovascular care

Everyone in the country has felt the effects of the global COVID-19 pandemic and national lockdown measures, and NHS services have been severely stretched.

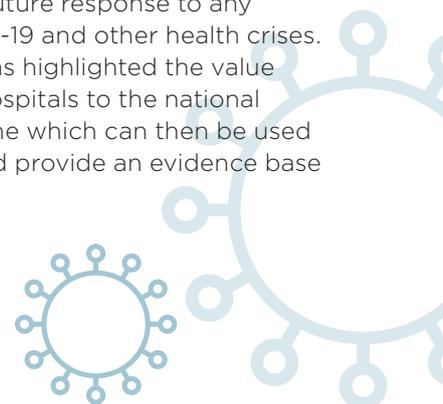
In September 2020, we published a report examining the impact of the pandemic on cardiovascular care. You can read the full report [here](#), and there is also a [patient summary](#). This research was also summarised in the [2020 Annual Report for Patients and the Public](#).

The research period for the COVID-19 report was the first wave of the COVID pandemic, however the research continued and below is a summary of the findings over the longer period:

- Cardiac related hospital admissions fell considerably, suggesting that some people with symptoms may have avoided going to hospital due to the COVID-19 pandemic, possibly because they feared being infected. There was a **35%** fall in the number of admissions for heart attacks in mid-April 2020 compared with January before the pandemic, mostly for the 'lower risk' heart attacks (which can cause significant damage to the heart if left untreated). The number of admissions rose to 90% of expected admissions in June after the first wave, but then dropped again in October during the second wave. There was a huge drop in admissions for heart failure (**60%** less than expected by 27 March 2020) which gradually increased after the first wave, and there was an increase in death rates with an estimated 280 extra deaths from heart failure than expected by the end of May 2020, many of them in homes, hospices and care homes.
- Patients with higher risk heart attacks were largely treated rapidly in line with recommendations, and most received an emergency PCI procedure to restore their blood flow, however fewer of these procedures took place. Non-White patients, who are predominantly from Black and Asian communities, took a longer time to access treatment, in keeping with pre-COVID, but during the pandemic period this was even more pronounced, and they were proportionately more likely to be admitted with symptoms of a higher risk heart attack than pre-COVID. Patients who experienced lower risk heart attacks and presented to hospital were treated more rapidly

than usual. As detailed in the COVID-19 Report, those who received an angiogram in hospital during the first wave in hospital saw the average (defined as the median time when **50%** of people had the procedure) time to receive it fall from 64 hours to just 26, as fewer of these procedures were taking place. However this group, normally including more female patients, older patients and patients with diabetes and other health conditions, was different during the pandemic, with fewer of these groups of patients admitted with this type of heart attack. There was an increase in patients being admitted after an Out-of-Hospital Cardiac Arrest, and among them were more older, female and non-White patients than during the pre-COVID period.

- The survival rate for patients who were recorded as having both COVID-19 and a heart attack diagnosis was lower than other heart attack patients, with **60%** of patients still alive at 30 days after admission.
- As the NHS coped with an increase in demand for critical care due to the pandemic, staff were redeployed, the focus was on treating the high numbers of COVID patients and expected volumes of planned cardiac surgery and other interventional cardiac procedures dropped. By the end of May more than 45,000 procedures had not been performed that would otherwise have been expected to have taken place, with the likelihood that significantly more than this are contributing to the backlog.
- Research continues to learn more about the impact of COVID-19 on the care of people with cardiovascular disease, as well as to provide evidence to the NHS and UK government to assist them to manage their future response to any further waves of COVID-19 and other health crises. Our COVID-19 report has highlighted the value of data submitted by hospitals to the national cardiac audit programme which can then be used to answer questions and provide an evidence base for decision-making.



The importance of collecting national patient data in cardiac healthcare



When a patient is admitted to hospital, data are collected about them

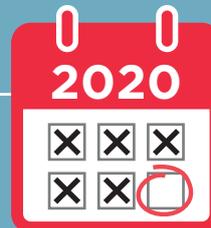
- Age
- Sex
- Ethnicity



Has the patient had the appropriate diagnostic tests?

Has the patient had any further complications following discharge from hospital?

How long was the patient in hospital?



Is the patient alive one year on?



What can we learn from audit data?

- How commonly are patients admitted with a heart attack or heart failure, and what are their characteristics in terms of age, sex and ethnicity?
- Which key diagnostic tests are patients being offered in your local hospital and how does this compare to other hospitals?
- Are they receiving care and any necessary procedures as soon as they need them?
- How common are complications of procedures and operations and do they happen more in certain hospitals?
- Data are linked with ONS records to establish if patient is still alive after a year – can we learn anything from discovering which patients have died and which are still alive? Were they offered the key tests? Can we identify groups of patients who are at particularly high risk of adverse outcomes?

To find out more about the vital importance of your patient data click [here](#)

Useful resources

Support for carers

<https://www.nhs.uk/conditions/social-care-and-support-guide/introduction-to-care-and-support/>
<https://carers.org/our-work-locally>

Mental health

Mental health issues go hand in hand with life changing health events. Post-traumatic stress disorder (PTSD), anxiety and depression can seem overwhelming but there is support available.

<https://www.nhs.uk/conditions/stress-anxiety-depression/free-therapy-or-counselling/>
<https://www.samaritans.org/>
<https://www.mind.org.uk/>
<https://www.bhf.org.uk/information-support/heart-matters-magazine/wellbeing/mental-health/coping-with-anxiety-and-depression>

Shared decision-making

Until fairly recently most medical decisions were made solely by the consultant, GP or nurse. But nowadays patients are encouraged to discuss the pros and cons of the treatment that a doctor has recommended. The advantage of this is that it can take into account the patient's concerns and their overall situation, rather than just focusing on the medical issues. Sometimes what a doctor or nurse thinks is best for the patient can differ from what the patient actually wants. The decision-making process is a two-way dialogue, so it is 'shared'.

<https://www.england.nhs.uk/shared-decision-making/>
<https://www.sarawickham.com/questions-and-answers/what-is-the-bran-analysis/>

Learn CPR

St John's Ambulance provides instruction on CPR.
<http://www.sja.org.uk/sja/training-courses/first-aid-courses/defibrillator-and-cpr.aspx>

Where is my nearest public defibrillator (AED)?

Try the Heartsafe website, which has a map of defibrillators in the UK.

<https://www.heartsafe.org.uk/aed-locations>

Try the GoodSAM app which will show you defibrillators close by on your mobile phone. You can also upload a picture of an unlisted defibrillator you spot when you are out and about. Many defibrillators haven't been registered with the local ambulance service, so this is a good way of flagging them up.

<https://www.goodsamapp.org/aed>

What can I do to keep my heart healthy?

The BHF Heart Matters magazine is a comprehensive and engaging resource for healthy lifestyle tips and personal stories about living with heart conditions.

<https://www.bhf.org.uk/information-support/heart-matters-magazine>
<https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/>
<https://www.nhs.uk/live-well/exercise/>

Guide to useful apps for managing your heart health

In last year's report we published a useful guide to the many apps available to help you live with a heart condition or improve your health. This can be found [here](#)

Thanks and acknowledgements

This report was written by Sarah Brown and Richard Corder as patient co-writers, and Kelly O'Brien, with support from the NCAP team and NICOR Patient Representative Group, and graphic design by Helen Joubert.

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National Institute for Cardiovascular Outcomes Research (NICOR)

NICOR is a partnership of clinicians, IT experts, statisticians, academics and managers who, together, are responsible for six cardiovascular clinical audits (the National Cardiac Audit Programme – NCAP) and a number of new health technology registries, including the UK TAVI registry. Hosted by Barts Health NHS Trust, NICOR collects, analyses and interprets vital cardiovascular data into relevant and meaningful information to promote sustainable improvements in patient well-being, safety and outcomes. It is commissioned by the Healthcare Quality Improvement Partnership (HQIP) with funding from NHS England and GIG Cymru/NHS Wales, and additional support from NHS Scotland.

Email: nicor.auditenquiries@nhs.net



Barts Health NHS Trust

With a workforce of around 17,000 people, Barts Health is a leading healthcare provider in Britain and one of the largest NHS Trusts in the country. The Trust's five hospitals – St Bartholomew's Hospital in the City, including the Barts Heart Centre, The Royal London Hospital in Whitechapel, Newham Hospital in Plaistow, Whipps Cross Hospital in Leytonstone and Mile End Hospital – deliver high quality compassionate care to the 2.5 million people of east London and beyond.



The Healthcare Quality Improvement Partnership (HQIP)

HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies. www.hqip.org.uk/