NATIONAL CARDIAC AUDIT PROGRAMME

2020 ANNUAL REPORT FOR PATIENTS AND THE PUBLIC

DECEMBER 2020

CONTENTS

ABOUT THIS REPORT

This patient report is designed as a companion to the **2020 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. NICOR is hosted by Barts Health NHS Trust.

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 2020 NCAP annual report and other key documents at https://www.nicor.org.uk/national-cardiac-audit-programme/, covering data from the 2018/19 financial year. For some of the measures, three years' data are considered (i.e. 2016/17 – 2018/19).

HOW TO USE THIS REPORT

The report is divided into the six areas of clinical expertise (called “specialties”) audited by NCAP. We have summarised some of the key findings from the full 2020 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 where to go for more information or support. If you would like to read specific specialty reports, for example for heart failure, links are provided so that you can view the report data.

WHY DO WE AUDIT?

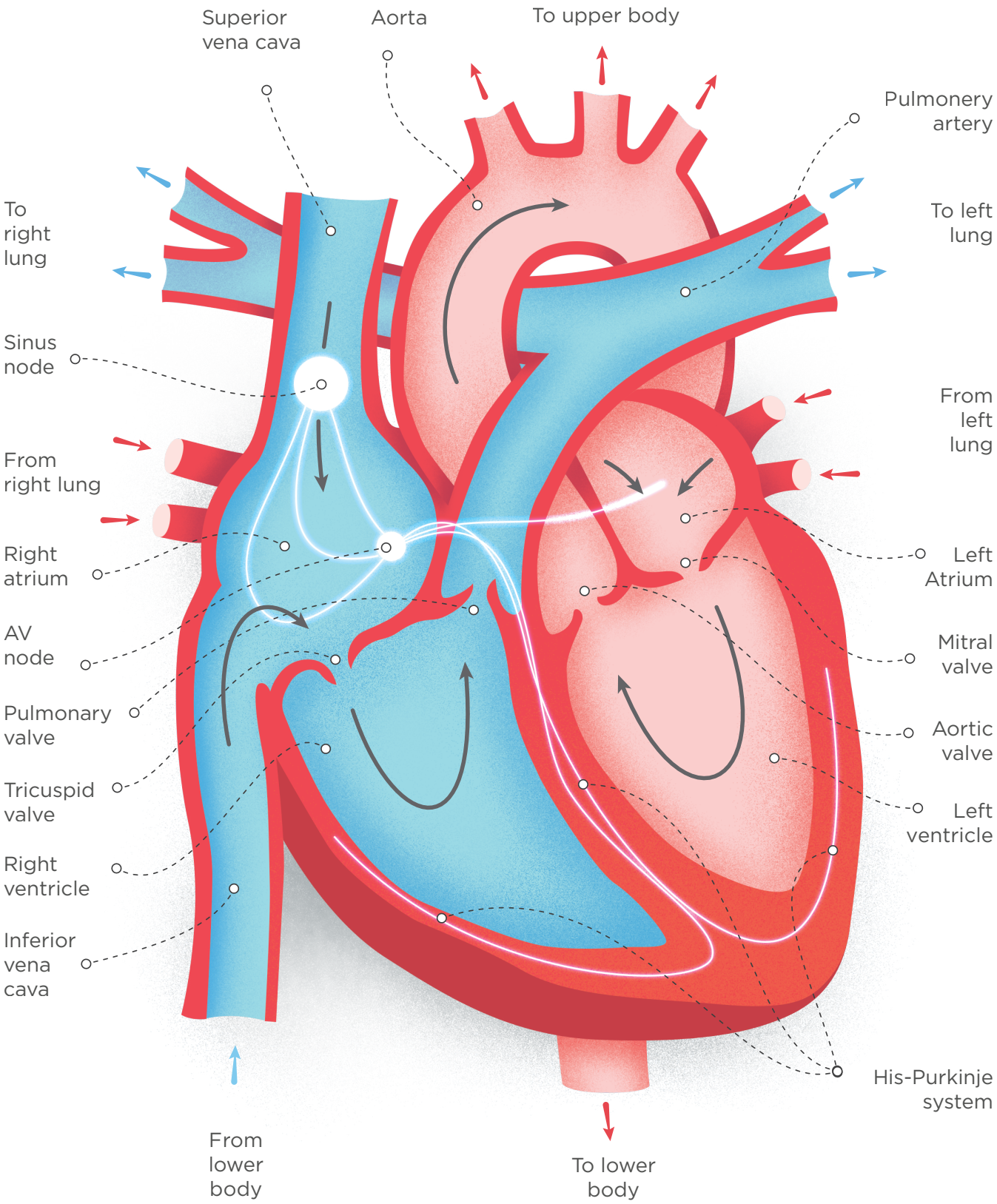
The information routinely collected from clinical audit is key to public health research. Many discoveries which have improved millions of lives worldwide have been made by analysing patient data, or the patient data have highlighted important areas of clinical research for medical researchers. For instance 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.

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 monitors that those standards are being met. It recommends actions which can help hospitals and medical professionals improve and also enables large healthcare organisations and commissioners to look at the national picture. It also provides data to help further research, the findings of which may then become very important for the audit programme.

CORONAVIRUS COVID-19 AND CARDIAC HEALTH AND CARE

This year we have seen an unprecedented demand on the NHS due to the global COVID-19 pandemic, which arrived in the UK in February 2020, and peaked in hospital admissions and hospital deaths in April. We published a report on the impact of COVID-19 on cardiovascular care in September 2020, and we look at some of the findings 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***. 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 18). Both of these cardiac events are a medical emergency and the person must receive treatment fast to maximise the chances of survival.

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** 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.

* 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

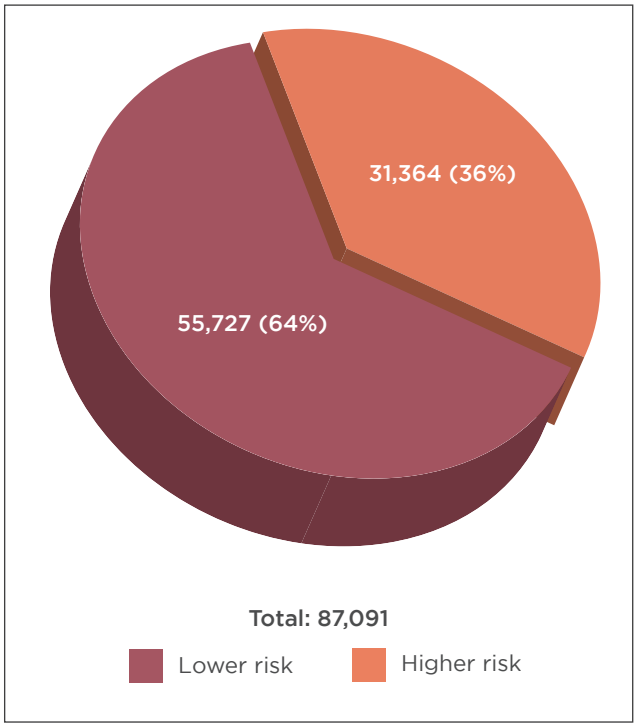
HEART ATTACK (MYOCARDIAL INFARCTION)

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. 68% of all heart attack patients in 2018/19 were men, compared to 32% of women.
- Smokers are also more likely to have a heart attack 10/11 years younger than non-smokers. 28.9% of heart attack patients in 2018/19 whose smoking status was known were regular smokers up until their heart attack. 36% were ex-smokers and 35.1% had never regularly smoked. 17.9% of heart attack patients who had already been diagnosed with coronary artery disease were still regularly smoking.
- Body Mass Index (BMI) is also a factor. Compared with a BMI of 25, women with a BMI of 40 are about 10 years younger, and men 5 years younger, when they first have a heart attack.
- There was a prior diagnosis of diabetes in 21.8% of heart attack patients who had not been previously diagnosed with coronary artery disease, with 21.3% of men and 22.9% of women having the condition.

Number of heart attacks in 2018/19 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).

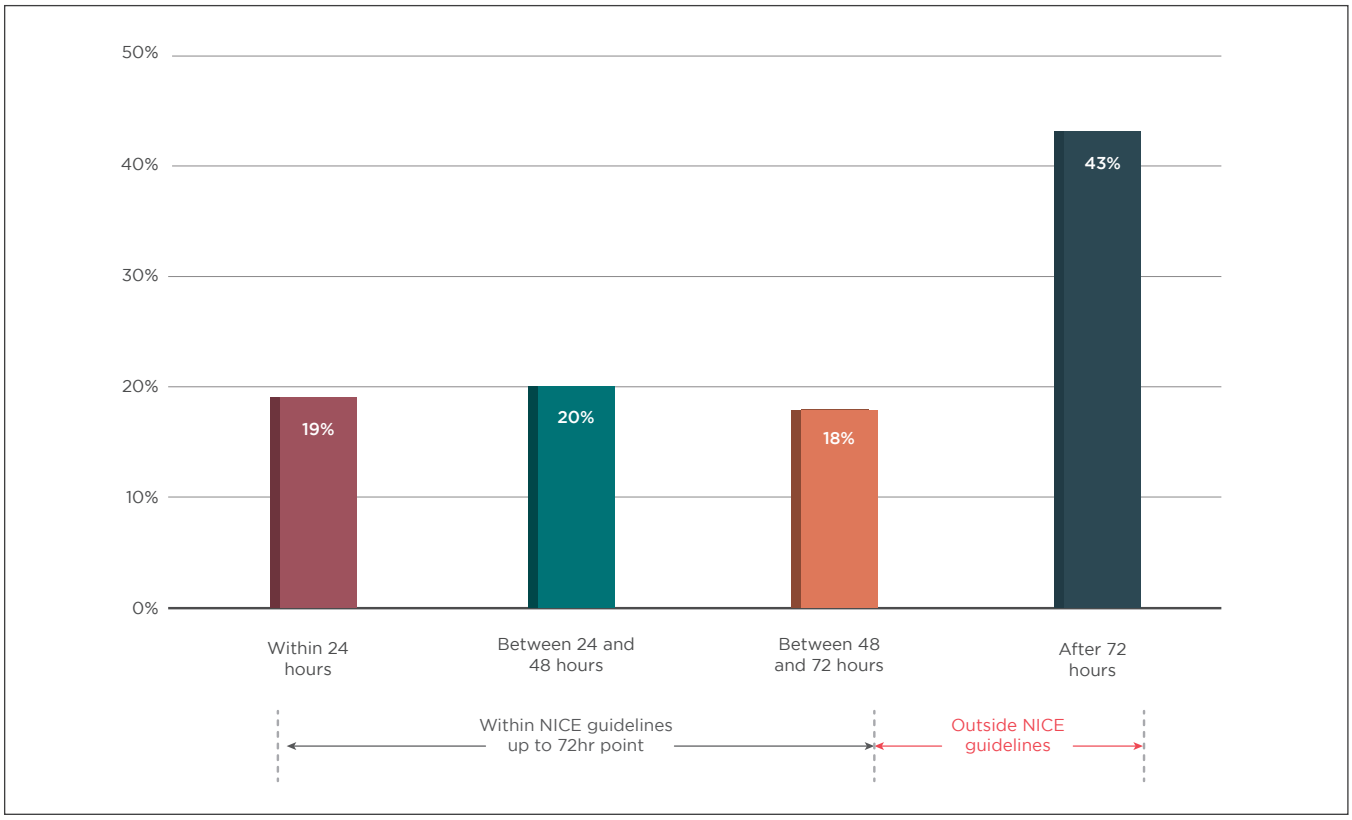
Other tests which can help to diagnose a lower risk heart attack include a **troponin** test, which measures levels of a heart muscle protein released into your blood when your heart muscle is damaged, or an **echocardiogram (echo)**. An **echocardiogram** is an ultrasound scan which bounces sound waves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

Time to angiography for lower risk heart attack patients in 2018/19 *(unchanged from 2017/18)*



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 page 10 - within 90 minutes of arrival at a hospital with a heart attack centre. This is achieved for 87% of patients (down by 1% from 88% in 2017/18).

Half of all patients in England in 2018/19 with higher risk heart attacks who either called 999 or self-

presented at a hospital will have received primary PCI in a hospital heart attack centre within 125 minutes (up from 122 minutes in 2017/18). In Wales half receive primary PCI within 140 minutes (138 the previous year) and in Northern Ireland half receive primary PCI within 116 minutes (up from 114 in 2017/18). 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 fact box on page 15). With the lower risk type of heart attacks, 60.9% of patients in 2018/19 were admitted to a cardiology ward, and 96.6% seen by a cardiologist. 90.4% of all heart attack patients were discharged home with all drugs for which they were eligible. 82% of all patients were referred to a cardiac rehabilitation programme.

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 (PCI)

QUICK FACTS

- Overall there were 100,294 (2.5% less than in 2017/18) PCI procedures (for all indications) performed for patients in the UK in 2018/19. This equates to 1,510 PCI procedures for every million people in the UK. These were carried out in 118 PCI centres.
- Rates of PCI in 2018/19 fell from the rates in 2017/18 in England (by 3%), Scotland (by 0.4%) and Northern Ireland (by 6.6%) but rose in Wales by 7.5% per million people.
- 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 65.6 years and 74.4% are men. 27.9% of patients in 2018/19 had previously had a PCI procedure before this one.
- 58 of the 118 PCI centres are set up to perform primary PCIs 24/7 every day of the year as an emergency treatment for high risk heart attacks.

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 the previous page 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 **88.7%** of PCIs being carried out through the wrist rather than the groin in 2018/19. This has steadily risen each year from only 10.2% in 2004. It will never be 100% because for some patients the groin is the best entry point. It's 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 2018/19 this target was achieved for **54.8%** of eligible patients and **67.8%** had received PCI within 96 hours.

DAY CASE PCI – WHERE 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 2017/18 (latest data available) **63.6%** of elective PCI procedures were performed as day cases.

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**.

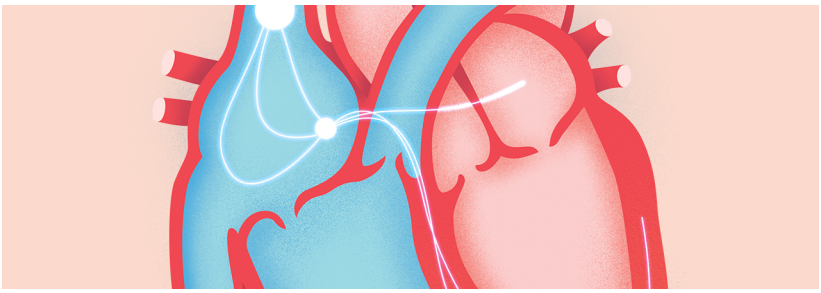
It's possible to have a heart attack without experiencing sudden chest pain – this is more common in women and people with certain conditions which affect how pain is experienced.

You can read more about heart attack symptoms here

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/patient-area/

ALL ABOUT AORTIC VALVE REPLACEMENTS

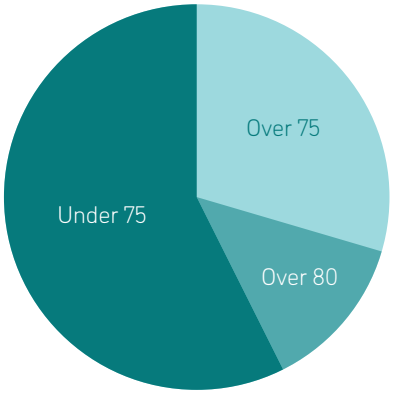


An Aortic Valve Replacement (AVR) is the second most common type of heart surgery. It is usually carried out where there is a narrowing of the aortic valve (known as aortic stenosis). The damaged valve is removed under general anaesthetic and the new valve attached.

The first successful heart valve replacement was performed in the US in 1960. This was a mechanical valve (see below). However it was followed by the development of techniques using tissue valves (either from animals, such as cows or pigs, or deceased human donors). AVR is often performed in combination with CABG (Coronary Artery Bypass Graft surgery – see page 13.

WHO HAS THE SURGERY?

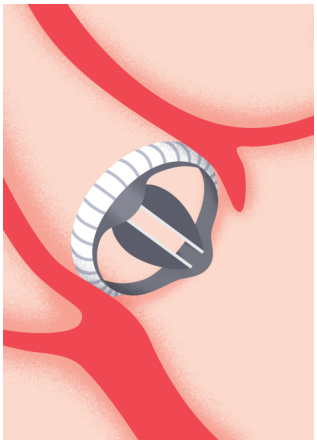
Percentage of isolated AVR (i.e. not combined with CABG) operations in patients by age



MECHANICAL V BIOLOGICAL (TISSUE) VALVE REPLACEMENTS

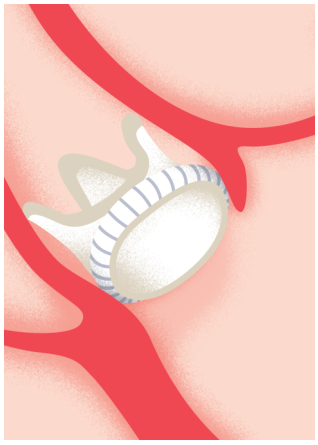
MECHANICAL VALVES

- Built to last a lifetime
- Patient will need to take anticoagulant (clot preventing) drugs (warfarin) for life
- Warfarin can require lifestyle changes, such as being careful with alcohol and certain medicines, or giving up contact sports, which are difficult for some patients
- Valve can sometimes be audible to the patient as a clicking sound



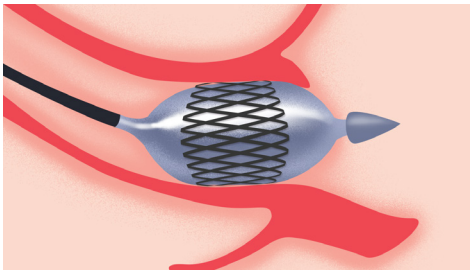
TISSUE VALVES

- No need to take warfarin
- Don't last as long as mechanical valves – but if the patient is over 70 they are likely to last for life
- If patient is under 60 likely to need further higher risk intervention in future
- Sometimes preferred by young women planning pregnancy so as to avoid warfarin



Talk to your consultant about which is best for you. He or she will discuss your options taking into account your individual circumstances.

ARE THERE ALTERNATIVES TO VALVE REPLACEMENT IF A VALVE IS DAMAGED?



TAVI (TRANSCATHETER AORTIC VALVE IMPLANTATION)

- Increase in the UK from 1872 procedures in 2014/15 to 5197 in 2018/19
- Procedure using a balloon and stent to insert a replacement tissue valve (similar to PCI - see page 10) via the groin
- Less invasive (and may be performed under local anaesthetic)
- No need for open heart surgery
- Better for older and frailer patients who would be less likely to benefit from surgery

ADULT CARDIAC SURGERY

Data from the National Audit for Adult Cardiac Surgery

QUICK FACTS

- The first coronary artery bypass graft operation was carried out in 1960, as was the first successful heart valve replacement
- A total of 31,642 cardiac operations were performed in the UK during 2018/19
- 14,098 first time coronary artery bypass graft (CABG) operations were carried out in 2018/19
- For all cardiac surgery (of any type), including emergencies, the survival rate in 2018/19 was nearly 97.5%, which has risen from 96% in 2006/07
- On average, there was a 99% survival rate for patients having a non-emergency CABG in 2018/19 in the UK.
- 5,091 first time aortic valve replacement (AVR) operations were carried out in 2018/19, with a further 2,739 carried out in combination with a coronary artery bypass graft operation (AVR + CABG)
- On average, in 2018/19 in the UK, there was a 99% survival rate for patients having a non-emergency AVR, and in low risk patients (the majority) having an AVR there was a survival rate of 99.3%

Adult Cardiac Surgery includes all procedures performed on patients aged 18 or over that involve the heart or structures attached to the heart. 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.

Coronary Artery Bypass Graft operations treat 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.

Coronary artery bypass grafting (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 **10 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 **34.9%** of patients receive their operation within this time, with **28.4%** in Scotland, **15.4%** in Wales and only **1.5%** in Northern Ireland doing so.

For elective CABG surgery the average UK waiting time for a suitable patient from their angiogram to the operation is **107 days** (a 10 day increase from 2017/18 and 12 days more than in 2016/17)

Patients stay in hospital for an average of **7.8 days** after their operation.

FACT BOX: AORTIC DISSECTION

Aortic dissection is a relatively rare, but serious medical emergency where the inner layer of the aorta (the main artery in the body - see our diagram on page 5) tears. Blood flows through the opening, which forces the layers of the aorta apart. This is life-threatening, and fast detection and treatment makes survival and recovery much more likely. Left alone, it can result in death through insufficient blood reaching the heart, or a complete aortic rupture through pressure on the aortic wall. Without emergency surgery, only around 50% of patients survive longer than 48 hours and only 20% are alive a fortnight later. Some patients are more vulnerable to aortic dissection, such as people with high blood pressure and some rare genetic disorders. Men are twice as likely as women to have an aortic dissection. Sometimes the condition can be difficult to detect and can be misdiagnosed on presentation to hospital.

Emergency surgery to repair the aorta, and sometimes also replace the aortic valve, is life-saving, but can only be performed in larger hospitals with cardiac surgical expertise - so, as with heart attack, it is important to call 999 immediately if symptoms are experienced, so that you can be taken to the nearest large heart centre. In the period 2016-19 there were 400 operations performed per year in the UK for aortic dissection and the in-hospital mortality rate over this period was 17.7% overall.

USEFUL RESOURCES FOR ADULT CARDIAC SURGERY PATIENTS:

- https://www.bhf.org.uk/informationsupport/treatments/coronary-bypass-surgery
- https://www.rcseng.ac.uk/patient-care/recovering-from-surgery/coronary-artery-bypass/
- https://www.nhs.uk/conditions/aortic-valve-replacement/what-happens/
- https://www.bhf.org.uk/informationsupport/conditions/aortic-aneurysm

HEART FAILURE

Data from the National Heart Failure Audit (2018/19)

QUICK FACTS

- The national audit reports on 74,696 patients who were admitted with symptoms of acute heart failure between April 2018 and March 2019.
- 82% of patients were seen by heart failure specialists. This figure is unchanged from 2017/18.
- 87% were given an echocardiogram and 96% an electrocardiogram (ECG) to look at their heart and assess its condition (see Heart Attack on page 7 for details of these tests). The number of ECGs is up 10% from last year when it was 86%.
- The average age of heart failure patients (men and women combined) is 81. This has increased by one year from last year. Men outnumbered women in every age group except those older than 85, and the average age of admission was younger for men.
- The rate of UK heart failure patients who die in hospital is 9.1%. This is down this year from 10.1% in 2017/18. Risk of dying in hospital varies with age, at 5.4% for those younger than 75 and 10.9% for the over 75s.
- After 1 year from discharge the survival rate of patients 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 has reported for the first time this year the survival rates for those discharged from hospital after staying less than one day. After 30 days **96%** of these patients were still alive, and a year later **78%**, which indicates that they are a lower risk group of patients (when the overall rate is **68%** after one year).

FACT BOX: THE IMPORTANCE OF 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 (91% of those treated by specialists received an echocardiogram compared to 70% if not seen by a specialist team, almost a 20% 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 17). They are also more likely to receive the appropriate triple drug therapy (see below), to be offered follow up out-patient appointments 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. There is a higher rate of survival after one year associated with all these factors.

The place of care in hospital is also key to the treatment of Heart Failure patients. Only 45% of these patients are admitted to a cardiology ward. 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 (**52%** for the most common form of heart failure) than a patient discharged on all three drugs (**83%**).

The three drugs recommended for heart failure are:

ACE Inhibitors/ARBs (prescribed to 84% of patients with the most common form of HF in 2018/19)

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/xIlaQuRaZmk

Beta blockers (prescribed to 90% of patients with the most common form of HF in 2018/19)

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 55% of patients with the most common form of HF in 2018/19)

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)

Data from the National Audit for Cardiac Rhythm Management

QUICK FACTS

- The first pacemaker implantation was performed in 1958
- 181 hospitals in the UK reported carrying out device implantation and 75 reported carrying out ablations in 2018/19
- There were 32,902 pacemakers implanted for the first time in the UK in 2018/19
- There were 19,091 ablations carried out in the UK in 2018/19

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.

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 (see fact box) which are often used to treat heart failure, when the heart becomes enlarged and contraction happens at different times on each side.

FACT BOX: CARDIAC RESYNCHRONISATION THERAPY (CRT)

In some patients with heart failure (see page 15), the weakening of the heart is made worse by poor coordination of the main chamber's pumping. CRT treatment uses an additional lead around the back of the heart, to permit the device to stimulate both sides simultaneously, improving the coordination of the heartbeat. With CRT-D devices both sides can be shocked into contracting regularly, when needed.

This resynchronisation does not restore the damaged muscle but "tuning" the engine can significantly improve weak heart function in heart failure patients, making symptoms easier to live with, as well as managing rhythm problems such as fast arrythmias, where the heartbeat is dangerously abnormal, which can

lead to a life-threatening sudden cardiac arrest. CRT devices can be pacemakers alone, (CRT-P) or additionally be defibrillators (CRT-D).

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 however when the person suffers ventricular tachycardia or ventricular fibrillation 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 25 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 service 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.

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 (2017/18 data latest available) require another procedure within a year, usually because of a complication. For complex devices (ICD and CRT) in 2017/18 this figure was **6.0%**.

Some patients undergoing ablation also require a second procedure, but this not because of a complication, rather because their arrhythmia recurred (i.e. the original procedure was not completely effective). Based on the UK hospitals where this could be analysed in 2017/18, a further procedure was required within 1 year following **3.2%** of simple ablations, and following **9.1%** of ablations for atrial fibrillation (AF).

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**".

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

CONGENITAL HEART DISEASE

Data from the National Congenital Heart Disease Audit

QUICK FACTS

- 13 babies a day are born with a heart or circulatory condition, affecting 1-2% of the UK population
- 25% of babies with congenital heart disease have critical CHD which requires heart surgery
- There were 4,326 operations on children under 16 in 2018/19 for congenital heart disease
- In total there were 12,064 congenital heart disease procedures on children and adults in 2018/19

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 small ventricular septal defects (holes 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.

For children who go on to need a procedure in the first year of life, **50%** of their congenital heart problems are currently picked up by the scan.**

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 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 **89.2%** of the babies with this condition who had to have a procedure before one year of age had their condition detected before birth in 2018/19 in the UK and Republic of Ireland. This has risen over the last decade from **69.1%** in 2008/09.

** 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.

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 2018/19 **78.3%** 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 **20.7**% in 2008/09.

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 2018/19 **56.6%** 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 **20.8%** in 2008/09.

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 6) 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 2018/19 **69.3%** 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 **28%** in 2008/09.

ANTENATAL DETECTION

50% 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) - **78.3%** of children needing a procedure before one year of age were diagnosed antenatally

Hypoplastic Left Heart Syndrome (HLHS) - **89.2%** of children needing a procedure before one year of age were diagnosed antenatally

Complete Atrioventricular Septal Defect (AVSD)- **56.6%** of children needing a procedure before one year of age were diagnosed antenatally

Tetralogy of Fallot- **69.3%** of children needing a procedure before one year of age were diagnosed antenatally

USEFUL RESOURCES FOR CONGENITAL HEART DISEASE PATIENTS:

- Tiny Tickers www.tinytickers.org
- 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.

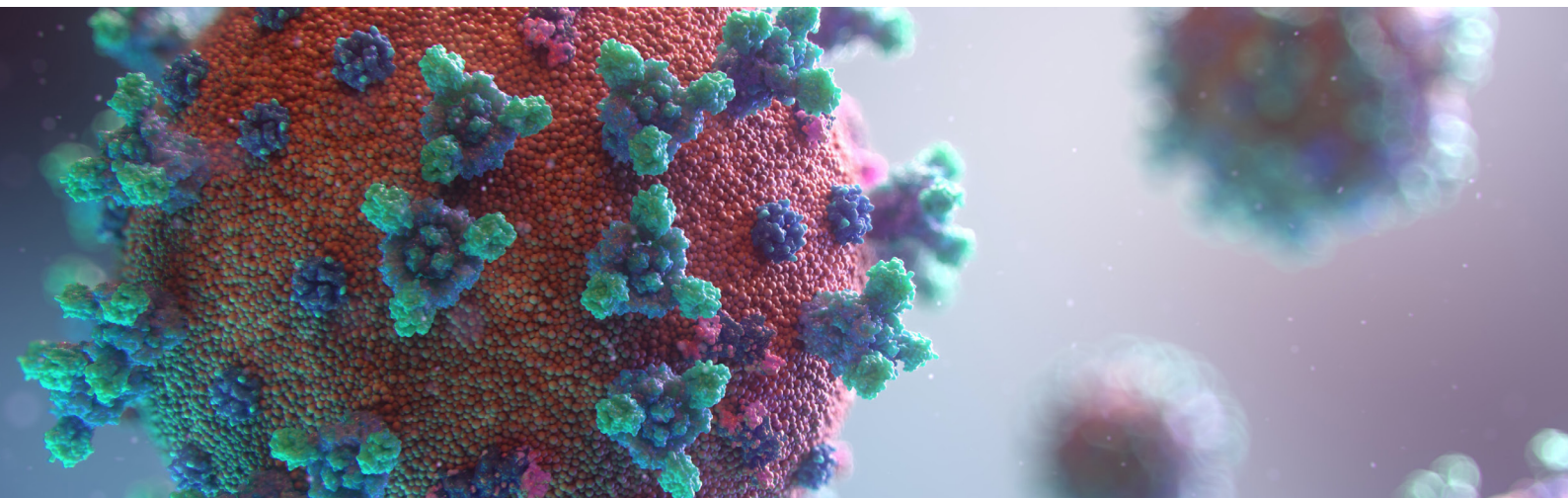
Here are some of the main points:

- Hospital admissions fell significantly, suggesting that some people with symptoms may have avoided going to hospital due to the COVID-19 pandemic. 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). Certain groups of people such as people with other health conditions, older people and women, were less likely than normal to present at hospital with heart attack symptoms. The 'higher risk' type of heart attack (STEMI) also saw a drop of around 25%. For heart failure there was an even greater drop in expected numbers – there were 66% less patients presenting at hospital with heart failure in mid-April 2020 than in January.

- In terms of treatment, 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. Patients who experienced lower risk heart attacks and presented to hospital were treated and those who received an angiogram in hospital saw the average (defined as the **median** time when 50% of people had had the procedure) time to receive it fall from 64 hours to just 26, as less of these procedures were taking place.

- 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. Transcatheter Aortic Valve Implantation (TAVI – see our infographic on page 12) fell by 50%. Cardiac ablation (see page 18) fell by 92% in April 2020. By the end of April more than 15,000 procedures had not been performed that would otherwise have been expected to take place.

- Research is ongoing to explore these areas further and learn more about the true 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 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 decisions.



A GUIDE TO USING FREE APPS TO MANAGE YOUR HEART HEALTH

We live in an increasingly online world. Smartphone and other online apps can help us navigate the bewildering amount of online support and advice out there. This guide is not meant to be prescriptive, it is intended to give you ideas about how you can use free online tools to help keep your heart healthy or manage an existing condition. In addition to the free apps suggested, you may be eligible in your local area for a range of digital health monitoring programmes involving home self-testing tools such as electronic blood pressure cuffs, or there are paid options such as myHeart in the NHS Apps Library for managing cardiac rehabilitation at home. Please consult your doctor before starting a new exercise regime or changing your diet.

MANAGE MEDICATION

If you take medication there are a number of apps which could help you manage this.

You can now often order and pay for your regular prescriptions online and have the medication delivered to save you visiting the GP or a pharmacy. The NHS website recommends several apps for this, such as Echo, which links up with your GP surgery to check your prescription. You can also use the app on behalf of another person even if they are at a different GP surgery.

Pill reminder apps such as Round or MyTherapy send you a push notification (phone alert) to remind you to take your medication at the correct time of day. If you do forget and ignore your phone the app will have a record of what you have missed.

If you take the anti-clotting drug warfarin there are various apps which enable you to self-test with a home testing kit and monitor your individual warfarin intake by logging your blood INR (International Normalised Ratio – how long it takes to form a blood clot) and sending it to your healthcare team. The Engage app is recommended by the NHS and available in its Apps Library.

LIFESTYLE OVERHAUL OR MAINTENANCE

There are a dizzying number of apps, both free and on subscription, to help you get fitter, eat well or kick unhealthy habits. Here are some free ones to give you ideas, but you can search the appropriate app store for your device.

With certain smartphones and wearable devices your steps are recorded during the day, making it easier to see how near you are to your target number, for instance 10,000 steps a day. The Public Health England Active 10 app breaks activity down into ten minute chunks of walking, and you can build up to a recommended 3 "Active 10s" of brisk walking a day. The app detects when you are walking briskly.

The free GoJauntly app uses GPS location technology to suggest picturesque walks in your area, curated for you by locals.

If you are happy and physically able to walk, and would like to start running for exercise the popular Couch to 5K plan makes running fun and achievable for beginners, with motivation and encouragement from your favourite celebrities, as you work your way up from running for a minute on Day 1 to running 5k 9 weeks later (or entirely at your own pace). Read Helen's story to see how she improved her fitness and overall wellbeing using the app after family bereavement due to heart disease.

The key to sustaining an exercise routine is above all doing something you enjoy, and/or something which gives you satisfaction when you see how you have progressed, whatever that means to you. There are plenty of apps to teach you new ways to exercise and track progress in the gym, pool, yoga studio, on your bike – wherever you like!

As we saw earlier in the report, high BMI is correlated with heart disease at a younger age. It's therefore important to keep track of your BMI if you are outside or just within the healthy weight zone, especially if you have a heart condition or are at higher risk of one. The NHS has a BMI tracker, but free fitness and diet tracker apps such as Myfitnesspal will also do this, and the integration with the diet tracker, with thousands of UK

branded foods and drinks and a recipe-builder function for dishes you cook often, makes it easier for to you to track nutrition and how much salt, fat and sugar you are eating, as well as counting calories, to stick to your healthy eating plan and measure weight loss progress.

If you have habits you need or want to give up or cut down on for your heart health, app-based programmes can help with that too. The NHS SmokeFree app is a supportive four week programme which motivates you to quit and shows you just how much money you are saving, as well as improving your health. The NHS Drink Free Days app and the Drinkaware app work in a similar way, letting you know how much money you are saving by cutting down on alcohol, while informing you whether your current levels of drinking are high, medium or low risk (based on the average person), and helping you to realise when you are most likely to be tempted to have one too many and avoid those places and situations if necessary.

MENTAL HEALTH SUPPORT

Managing your mental health as a cardiac patient or carer for someone you love can be challenging, but there are lots of resources online. See also the following Useful Resources section for some web links to organisations. Below are some apps that might offer support for you.

Worrytree is a simple app available in the NHS Apps Library which uses Cognitive Behavioural Therapy (CBT) techniques to explore your day to day thought patterns and take control of anxiety by recording your worries so that you can find a personal strategy to cope with them, which may be a practical action plan, or alternatively a distraction from focusing on things you have no control over.

Research has found that deep breathing and relaxation techniques and meditation can help lower blood pressure and reduce stress and anxiety. Apps helpful for incorporating meditation, deep breathing and mindful thinking into your day include the bestselling Calm, which has a free and premium subscription version, and a library of guided meditation programmes and relaxing sound effects, Insight Timer, a meditation app with 55,000 free meditations, or iBreathe which guides you through a series of deep breathing exercises.

It can feel lonely and overwhelming living with a heart condition but you are not alone. The Healthunlocked forum, with over 4 million active users in 700 subject specific communities, will put you in touch with thousands of people who share your health situation, or that of people you care for.

USEFUL RESOURCES

SUPPORT FOR CARERS

- https://www.nhs.uk/conditions/social-care-and-support-guide/introduction-to-care-and-support/
- https://carers.org/help-and-info/carer-services-near-you

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/informationsupport/heart-matters-magazine/wellbeing/mental-health/coping-with-anxiety-and-depression
- https://www.thecalmzone.net/

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

The British Heart Foundation's HeartStart network of voluntary organisations provides free or inexpensive training in CPR to individuals and groups. Access the location search here. St John's Ambulance also provides instruction.

- https://www.bhf.org.uk/how-you-can-help/how-to-save-a-life/how-to-do-cpr/heartstart-training
- http://www.sja.org.uk/sja/training-courses/first-aid-courses/defibrillator-and-cpr.aspx

WHERE IS MY NEAREST PUBLIC DEFIBRILLATOR (AED)?

Try the Have a Heart Foundation, which has a comprehensive list of defibrillators in the UK.

- https://www.haveaheartfoundation.co.uk/defibrillators

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/informationsupport/heart-matters-magazine
- https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/
- https://www.nhs.uk/live-well/exercise/

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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 the Welsh Government and, for four of the domains, from the Scottish Government. Funding has been sought to aid the participation of hospitals in Northern Ireland, the Republic of Ireland and the private sector.
Email: nicor.auditenquiries@nhs.net

Barts Health NHS Trust

With a turnover of £1.5 billion and 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, 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/national-programmes