

Patient information factsheet

Cardiac resynchronisation therapy (CRT)

The normal electrical system of the heart

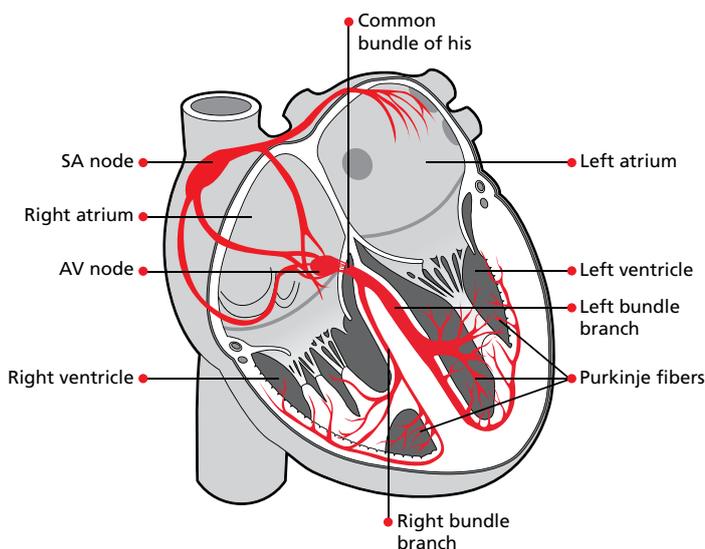
The heart has its own electrical conduction system. The conduction system sends signals throughout the upper chambers (atria) and lower chambers (ventricles) of the heart to make it beat in a regular, coordinated rhythm. The conduction system consists of two nodes that contain conduction cells and special pathways that transmit the impulse.

A normal heartbeat begins when an electrical impulse is fired from the sinus node (also called sino-atrial or SA node), in the right atrium. The sinus node is responsible for setting the rate and rhythm of the heart and is therefore referred to as the heart's pacemaker.

The electrical impulse fired from the SA node spreads throughout the atria, causing them to contract and squeeze blood into the ventricles. The electrical impulse then reaches the atrioventricular node (AV node), which acts as a gateway, slowing and regulating the impulses travelling between the atria and the ventricles. As the impulse travels down the pathways into the ventricles the heart contracts and pumps blood around the body. The cycle then begins again.

A normal adult heart beats in a regular pattern 60 to 100 times a minute; this is called sinus rhythm.

Diagram of the heart's electrical system



Arrhythmia

Sometimes if the conduction pathway is damaged, blocked, or an extra pathway exists the heart's rhythm changes. The heart may beat too quickly (tachycardia), too slowly (bradycardia) or irregularly. This may affect the heart's ability to pump blood around the body. These abnormal heartbeats are known as arrhythmias. Arrhythmias can occur in the atria or in the ventricles.

Cardiac resynchronisation therapy (CRT)

CRT is a therapy that is sometimes required to maximise the pumping function of the heart in patients with underlying poor ventricular function, for example, patients with heart failure. The two lower chambers of the heart, the ventricles, often become uncoordinated, making the heart less efficient. A normal pacemaker only has wires (leads) in the right side of the heart. CRT requires an extra wire to be placed into the left ventricle to enable both sides to beat together (resynchronisation).

Making the lower chambers of the heart work together can improve the overall function of the heart as a pump and reduce the symptoms of breathlessness and fatigue. Your doctor has decided that you may benefit from CRT as you have been noted to have reduced ventricular pump function.

Other tests

Your doctor is likely to suggest you have a number of tests before the decision is taken to implant a CRT device.

You may have an angiogram (cardiac catheter) to check the blood supply to the heart. Due to a blockage or narrowing in one of the coronary arteries (vessels that supply the heart muscle with blood) you may have a reduced blood flow to the heart. This can cause ischaemia (lack of oxygen to the heart muscle), which can reduce the pump function of the heart. If the blockages or narrowings can be treated by angioplasty, which is the inflation of a balloon catheter to widen the narrowed artery or by cardiac surgery, you may no longer require CRT therapy as normal blood flow is returned to the heart.

Some patients will need to have a magnetic resonance imaging scan (MRI) to look in a very detailed way at the structures and muscle of the heart. However if you already have a device implanted, for example a pacemaker or ICD, you may not be able to have an MRI scan, this is because the MRI scanner uses magnetic fields to generate the images.

Risks of the procedure

CRT implantation is safe. However, as with any procedure, there are potential risks. The risks will be fully explained by your doctor before you have your procedure. CRT implantation is performed safely in both children and adults.

Cancellations

Unfortunately we do sometimes have to cancel procedures. If this happens to you, we will always try to explain the reason. We fully appreciate that this is a stressful time for you and your family and we will do our best to provide you with a new date that is convenient for you as soon as possible.

Further information and contacts

We cannot guarantee that a particular person will perform the procedure. The person will, however, have appropriate experience.

If you have any questions regarding your forthcoming procedure please call **023 8120 8436** to speak to a cardiac rhythm management clinical nurse specialist. If you have a query relating your admission date please contact the cardiac rhythm management coordinator on **023 8120 8772**.

You can also email crmnurses@uhs.nhs.uk

The following websites also provide useful information:

www.bhf.org.uk

www.heartrhythmcharity.org.uk

If you need a translation of this document, an interpreter or a version in large print, Braille or on audio tape, please telephone 023 8120 4688 for help.