



Arrhythmia Alliance

The Heart Rhythm Charity

Promoting better understanding, diagnosis, treatment and quality of life for individuals with cardiac arrhythmias

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Bradycardia (Slow Heart Rhythm)



Introduction

This booklet is intended for use by people who have experienced a bradycardia. The information within this booklet comes from research and previous patients experiences and gives a brief explanation of bradycardia and available treatments.

This booklet should be used in addition to the information given to you by doctors, nurses and physiologists. If you have any questions about any of the information given in this booklet, please ask your nurse, doctor or cardiac physiologist.

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*Arrhythmia Alliance patient booklets are reviewed annually.
This booklet will be next updated October 2007 if you have any
comments or suggestions please contact A-A.*

GLOSSARY OF TERMS

Arrhythmia	Irregular heart rhythm
Atria	Top chamber of the heart
Asystole	Cessation of heart beat
Bradycardia	Slow heart rhythm
Event Monitor	Monitor to record heart beats
Heart Block	Electrical impulses are slowed or blocked as they travel from the top to the bottom chambers of the heart
Insertable Loop Recorder	Monitor implanted for a period of time to record your heart rhythm
Syncope	Loss of conscious due to bradycardia or asystole
Ventricles	Bottom chambers of the heart

The normal electrical system of the heart

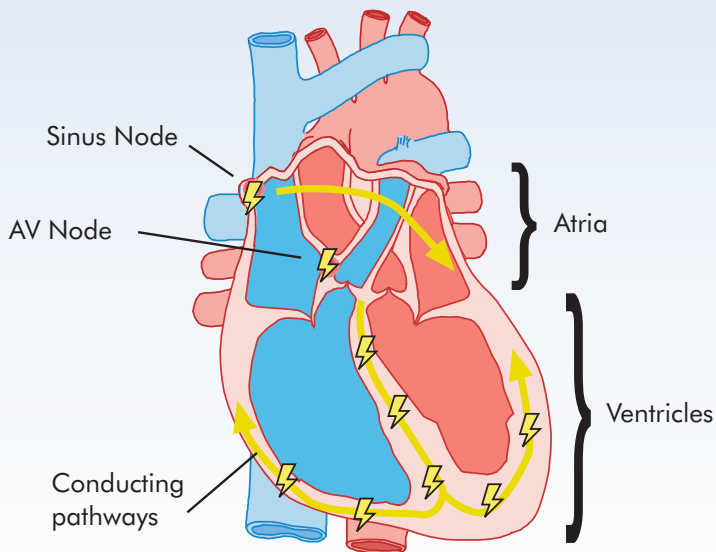
The heart has its own electrical conduction system. This conduction system sends electrical signals (impulses) throughout the upper (atria) and lower (ventricles) chambers of the heart to make it beat in a regular, coordinated rhythm. The conduction system is made up of two nodes that contain conduction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

The normal heartbeat begins when an electrical impulse is created and sent 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 so that they contract and pump blood to the lungs and around the body. The cycle then begins all over again.

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

Diagram of the heart's electrical system



What is an arrhythmia?

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

Bradycardia is a term that describes a number of different conditions in which the heart beats at an unusually slow rate.

Sinus bradycardia is an unusually slow heartbeat due to normal causes and commonly occurs in athletes or during a state of deep relaxation. This is perfectly normal and should not usually cause any difficulties. Sinus bradycardia can also occur in patients with heart disease or in response to different medications. The severity of and treatment required for the bradycardia depends on the area of the heart affected. If impulses are sent from the sinoatrial node at a slow rate, or if the impulses are delayed as they travel through the conduction system, the heartbeat will be slow. Bradycardia may also be caused by age-related degeneration of the heart's electrical conduction system, coronary heart disease or by medications prescribed to treat arrhythmias or high blood pressure. Once these medications have been reduced or discontinued, the bradycardia will usually resolve on its own.

Signs and symptoms of bradycardia

Some types of bradycardia produce no symptoms, and others may cause dizziness, breathlessness on exertion or fainting (syncope).

Sick Sinus Syndrome occurs when the heart's natural pacemaker, the SA node fails, causing an irregular heartbeat. Patients with sick sinus syndrome may experience a slow heartbeat (bradycardia), a fast heartbeat (tachycardia) or heartbeats that swap between fast and slow (*brady-tachy syndrome* or *tachy-brady syndrome*). Patients may experience dizziness, tiredness, weakness or fainting (syncope). Although, it is more common in elderly people it can occur in children, often after cardiac surgery.

Syncope there are many causes of syncope, some common and some rare. Most cases of syncope are due to the 'common' faint however other important causes include defects of the 'wiring' of the heart. Syncope can occur when the heart slows or momentarily stops (asystole) therefore oxygenated blood is not pumped to the brain causing light-headedness, dizziness, fading of vision, buzzing in the ears before loss of consciousness. Often patients will recognise these symptoms and be able to sit or lie down before losing consciousness. However for many there are no symptoms, just an abrupt loss of consciousness. People of all ages experience syncope, including children (reflex anoxic seizures/reflex asystolic syncope due to unexpected stimuli such as a bump or fright). Syncope involving bradycardia can easily be diagnosed by taking a detailed history and using an event monitor if occurrence is regular and frequent or an insertable loop recorder if irregular and less frequent.

There is a separate leaflet available explaining the various types of syncope. If you require an insertable loop recorder your doctor, nurse or physiologist will discuss this with you and provide you with a separate leaflet explaining in more detail.

Heart block (*atrioventricular block or AV block*) occurs when electrical impulses are slowed or blocked as they travel from the top chamber of the heart (atria) through the atrioventricular node (AV node) into the bottom chambers (ventricles). The symptoms and treatments for heart block depend on its severity, the different types of heart block and the treatment options available are explained below.

First-degree heart block occurs when the electrical impulses slow as they pass through the AV node, however all impulses reach the ventricles.

First-degree heart block rarely causes any symptoms and is often found in athletes. No other treatments are generally necessary. Patients with known first degree heart block should not be prescribed beta-blockers unless very carefully supervised.

Type I second-degree heart block occurs when the electrical impulses are delayed to a greater extent with each heartbeat until a beat is skipped entirely and the cycle then repeats. This may rarely cause dizziness and other symptoms. In such cases, a pacemaker may be required.

Type II second-degree heart block occurs when some of the electrical impulses from the SA node are unable to reach the ventricles, for example every third or fourth impulse. This is usually because of an underlying disease. Usually a pacemaker may be required to control and regulate the heart rhythm.

Third-degree heart block (*complete heart block*) occurs when no electrical impulses reach the ventricles, this is usually as a result of underlying disease or medications. In the absence of any electrical impulses from the atria, the ventricles produce impulses on their own; these are called ventricular escape beats. However, these heartbeats are usually slow and the patient may feel very unwell. This type of heart block can sometimes occur for a short time in certain types of heart attack and may require a temporary pacemaker. Sometimes the patient remains relatively well and a pacemaker can be implanted after a few days. On other occasions this condition needs to be treated more quickly and if a pacemaker cannot be implanted immediately, the doctors will put a temporary pacemaker wire into the heart to keep the heart pumping regularly until the permanent system is implanted.

Treatment options for bradycardia

Commonly symptomatic bradycardia is treated by discontinuing any medications that slow the heartbeat and treating any underlying conditions and/or by implanting a permanent pacemaker. Pacemakers are implanted under the skin and the wires are permanently attached to the heart. When a slowed or abnormal heart rhythm is detected, the pacemaker fires a very small electrical impulse to regulate the heartbeat. If you require a permanent pacemaker your doctor, and nurse and/or physiologist will discuss this with you and provide you with a leaflet explaining this in more detail. For further information contact Arrhythmia Alliance for our Pacemaker Patient Information Leaflet.

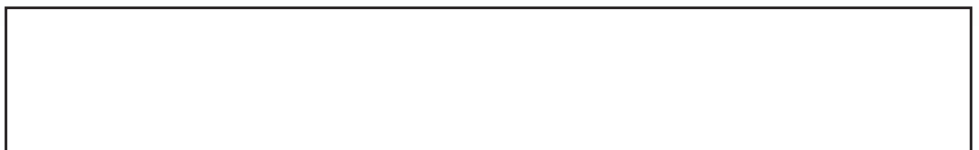
Useful websites

A list of useful sites can be found at :-

www.arrythmiaalliance.org.uk - This list is not exhaustive and it is constantly evolving. If we have excluded anyone, please accept our sincerest apologies, and be assured that as soon as the matter is brought to the attention of the **Arrhythmia Alliance**, we will quickly act to ensure maximum inclusiveness in our endeavours.

Finally

Please feel free to discuss any concerns you may have with your doctor, physiologist or your specialist nurse at any time.



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Please remember these are general guidelines and individuals should always discuss their condition with their own doctor.



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