

HEART SERIES H6

# LIVING WITH A PACEMAKER

Chest  
Heart &  
Stroke  
Scotland



# Chest Heart & Stroke Scotland



**Chest, Heart &  
Stroke Scotland, is  
an independent  
medical charity  
which aims to  
improve the quality  
of life for people in  
Scotland affected by  
chest, heart and  
stroke illnesses,  
through medical  
research, advice and  
information and  
support in the  
community.**

## **FUNDRAISING**

CHSS is an independent Scottish medical charity. We receive no Government funding and rely entirely on the Scottish public to raise the £5 million a year we need to help people with chest, heart and stroke illness throughout Scotland.

## **RESEARCH**

We are one of Scotland's largest charitable funders of medical research, with a programme worth over £600,000 a year. We fund research projects throughout Scotland into all aspects of the prevention, diagnosis, treatment and social impact of chest, heart and stroke illness.

## **PERSONAL SUPPORT GRANTS**

We provide small grants to people in financial difficulty, because of chest, heart or stroke illness, for items ranging from disability equipment and household goods to respite care and holidays. Applications are submitted through local Social Work Departments, or health professionals.

## **VOLUNTEER STROKE SERVICE (VSS)**

We give support to people whose communication skills are impaired after a stroke. The VSS provides weekly group meetings and home visits for patients.

## **CHSS NURSES**

Our nurses provide independent practical advice and support to those who have chest, heart and stroke illnesses, their families, carers and health professionals. There are dedicated nursing services in Fife, Grampian, Highland, Lanarkshire, Lothian and Dumfries and Galloway. There is also a Scotland wide nurse led Advice Line (0845) 077 6000. Calls are charged at a local call rate (out of hours answerphone). We have a wide range of booklets, factsheets and videos on chest, heart and stroke illnesses.

## **COMMUNITY SUPPORT NETWORK**

CHSS provides support to affiliated chest, heart and stroke clubs through the Community Support Network. The clubs are independent and are run by local volunteers. The groups provide a range of activities and offer people support, stimulation and companionship in a friendly and relaxed environment. Please ask for more information.

**FOR FURTHER INFORMATION ABOUT ANY  
OF THE SERVICES ABOVE PLEASE CONTACT  
HEAD OFFICE BY PHONING 0131 225 6963 OR  
VISIT THE CHSS WEBSITE: [www.chss.org.uk](http://www.chss.org.uk)**

## CONTENTS

<b>How the heart works</b>	<b>2</b>
<b>The heart's electrical system</b>	<b>3</b>
<b>What is a pacemaker?</b>	<b>5</b>
<b>Why do I need a pacemaker?</b>	<b>7</b>
<b>How is a pacemaker fitted?</b>	<b>8</b>
<b>When to see the doctor</b>	<b>11</b>
<b>What can and can't interfere with my pacemaker?</b>	<b>12</b>
<b>Getting back to normal</b>	<b>13</b>
<b>Useful addresses and websites</b>	<b>15</b>

# LIVING WITH A PACEMAKER

## HOW THE HEART WORKS

The heart is the pump at the centre of the body's circulation system. Blood is pumped around the body through a network of blood vessels.

This system ensures that fresh blood, containing oxygen and nutrients, is delivered throughout the whole body, and carbon dioxide and waste products are taken away.

The heart is a muscular pump made up of four chambers. These are the right and left atria and the right and left ventricles.

To ensure an adequate blood supply to the whole body the four chambers have to pump regularly and in sequence.

A series of four heart valves keep the blood moving in the right direction.

The pumping action of the four chambers is coordinated by electrical signals telling the heart when to contract and relax.

As the heart is a muscle it requires its own efficient blood supply to provide it with the oxygen and nutrients it needs.

So, in order for the heart to function properly, it needs all of the following to work efficiently:

- the heart's pumping action
- the blood supply to the heart itself
- the heart's electrical system
- the heart valves

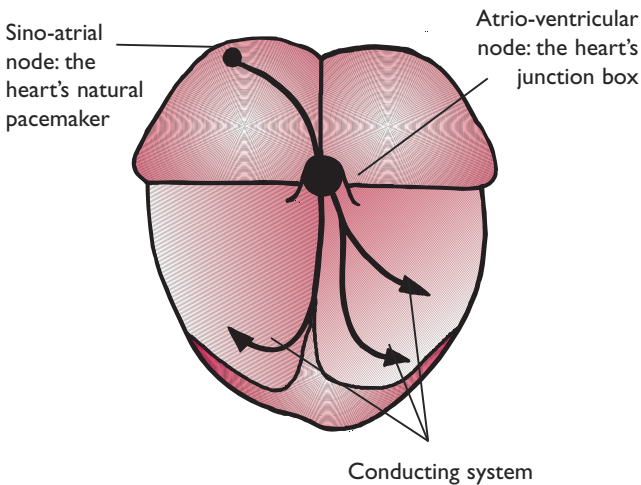
## THE HEART'S ELECTRICAL SYSTEM

The muscular pumping action of the heart is triggered by electrical signals which are sent through the heart muscle telling it when to contract and relax.

The electrical signal starts in the right atrium (see figure 1) where the heart's natural 'pacemaker', called the sino-atrial node, is situated. This signal crosses the atria, making them contract. Blood is then pumped through the valves into the ventricles.

Where the atria meet the ventricles there is an area of special cells, called the atrio-ventricular node. These cells act as a 'junction box' and pass the electrical signals throughout the heart muscle by a system of electrical pathways, known as the conducting system. This makes the muscles of the ventricles contract. Blood is then pumped through the pulmonary and aortic valves into the main arteries.

*Figure 1. Diagram of electrical pathway*



The ‘pacemaker’ produces another electrical signal and the cycle starts again.

### **What can go wrong with the electrical system?**

Normally the heart will beat between 60-80 times per minute. This regular rhythmic beating is dependent upon electrical signals being conducted throughout the whole heart.

If the electrical signals within the heart are interrupted or disturbed then the heart can beat too quickly (tachycardia), too slowly (bradycardia) and / or in an irregular way. This is called an arrhythmia.

Common causes of arrhythmias include:

- complications from a heart attack
- complications from heart surgery
- coronary artery disease
- high blood pressure
- heart valve problems

### **Artificial pacemaker devices**

Depending on your symptoms your heart specialist may suggest fitting an artificial pacemaker device. This will monitor how your heart is beating and correct any problems by stimulating the heart chambers to beat regularly enough to meet your body’s needs.

*See the CHSS booklet ‘Understanding heart disease’ for more information.*

## WHAT IS A PACEMAKER?

A pacemaker is a clever device that is used to correct and regulate an abnormal heart rhythm. When necessary, a pacemaker will send out electrical signals to stimulate your heart's chambers to contract and relax in a regular way. In effect, pacemakers artificially take over the role of your heart's natural pacemaker. They can be set to work only if needed (on demand) or all the time (fixed rate).

A pacemaker consists of a 'box' and pacing wires.

### **The pacemaker box**

A lithium battery, the pulse generator and a tiny computer, are safely encased in a small titanium box to protect it within your body. It is about the size of a matchbox and weighs about 20-50g (1-2 oz). The battery will be tested periodically and is replaced long before it runs out. Your pacemaker has to be removed to replace the battery.

The tiny computer can be programmed according to your individual needs.

If your condition changes then alterations to the programme can be made. This can be done, without another operation, by electromagnetic signals from an external programme.

**The pacing wire**

Electrodes are attached to the end of one, two or more pacing wires (leads) which are placed inside the chamber(s) of your heart depending on what type of arrhythmia you have. From there information about your heart rate and rhythm is sent to the computer which recognises if impulses to the chambers are needed 'on demand' or if 'fixed rate' checks that the rate is correct. Impulses are delivered by the electrodes, according to the discharge rate the doctor has set for you.

**Implantable cardioverter defibrillators or 'ICD's**

There is a special type of pacemaker called an implantable cardioverter defibrillator or 'ICD' which can deliver much stronger electrical impulses to reverse a dangerous heart rhythm. The fitting of an ICD is the same as for a pacemaker.

*See the CHSS booklet 'Living with an ICD' for more information.*

## WHY DO I NEED A PACEMAKER?

If the electrical activity of your heart is interrupted your heart may be unable to pump sufficient blood around your body. This can cause symptoms to occur. You may be tired and lethargic and have an increased risk of falls and blackouts. Depending on your symptoms your heart specialist may suggest fitting a pacemaker device.

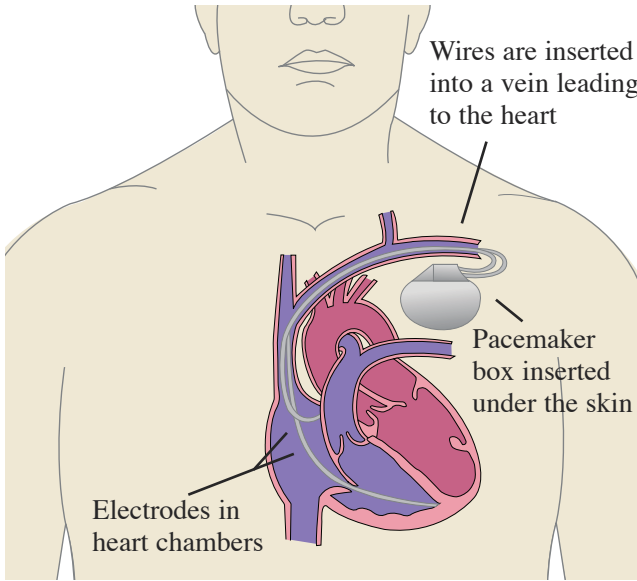
Pacemakers are mainly used:

- To deal with your heart going too slowly.
- When your heart's electrical activity does not join and it can not deliver an adequate rhythm (called heart block).
- When your heart is periodically running too fast, it may be necessary to take drugs that will slow your heart down. However, during the times when it is not going too fast, the drugs will still have this effect resulting in too slow a heart rate. A pacemaker would ensure that this low rate was corrected.
- If your old heart rhythm is wiped out altogether for whatever reason e.g. ablation therapy (used for some arrhythmias). A pacemaker would replace your heart rhythm and ensure a regular heart rate is restored.

## HOW IS A PACEMAKER FITTED?

It is often fitted under local anaesthetic but sometimes it may be necessary to fit a pacemaker during other forms of heart surgery.

- The most common way of fitting a pacemaker is through a vein. This is called the transvenous route. The procedure takes about one hour and is done under local anaesthetic. It usually involves an overnight stay in hospital (though it can be done as a day case).
- After a local anaesthetic is given, a small cut is made on your upper chest region below your collarbone. The wires enter your heart by following the path of a vein under your collarbone (subclavian vein) or the one running along the inside of your shoulder (cephalic vein).
- The electrode at the tip of the wire is positioned, with the help of x-rays, to your inner heart wall in the correct chamber. The wires are held in place by specially designed prongs that allow the wire to settle into the tissue and become lodged there in time.
- The pacemaker box is attached to the other end of the wires and placed flat in a pocket under your skin. Stitches are then used to close the wound.
- A chest x-ray will be taken before discharge from hospital. This is to check the final position of your pacemaker and to ensure your lungs have not been damaged in any way.



### **Taking care after surgery**

Immediately following surgery the connection is quite vulnerable so it is important that you take a bit of care by avoiding extreme movement of your arm on the affected side or by using it too much. Also avoid any sport or activity where you could get hit or kicked on the area where your pacemaker has been fitted.

It is important to keep an eye on the wound for about 10 days. If there is any sign of infection (such as redness, tenderness, soreness or swelling) you should notify your GP immediately, so that antibiotics can be started straight away.

Most stitches will dissolve on their own. If not they will be removed 7 - 10 days later usually by the nurse at your doctor's surgery.

**Identification card**

You will be given an identification card to carry with you at all times. This will have details about you, your pacemaker, your doctor and the hospital you attend.

Remember to tell medical, nursing and dental staff about your pacemaker before any test or procedure using medical / electronic devices.

**Routine check-ups**

You will need regular check-ups, usually at a pacemaker clinic, to ensure your pacemaker is working properly and to monitor the battery life.

At first your doctor may want to see you every month; once things are stable your check-ups will be every 3-12 months.

## WHEN TO SEE THE DOCTOR

- If your symptoms return (such as dizziness or blackouts) then you should see your doctor as soon as possible.
- If you have any worries or concerns about having a pacemaker fitted, make a note of them and ask your doctor to explain things in more detail. It is important that you are confident about how your pacemaker works and what you can and cannot do.



## **WHAT CAN AND CAN'T INTERFERE WITH MY PACEMAKER?**

Most pacemakers are designed with built in features to protect them from common types of electrical interference that you might encounter. You should discuss, with your doctor, what equipment is dangerous to use at work e.g. electric welding equipment.

If you suspect electrical interference with your pacemaker, simply move away or turn off the equipment. Sit down if you feel dizzy and contact your doctor if you continue to feel unwell.

- Mobile phones, MP3 players, headphones and palm / pocket PCs can be used safely as long as they are not placed directly over your pacemaker (e.g. in a breast pocket).
- Airport security systems: bring your pacemaker identification card with you and tell security staff that you have a pacemaker.
- You cannot have a Magnetic Resonance Imaging scan (MRI) when you have a pacemaker.

## GETTING BACK TO NORMAL

Most people live a normal life after they have had a pacemaker fitted.

You can carry on with your usual day to day activities once your wound has healed.

After about a month it is usually possible to resume most exercise and sexual activity and forget about your pacemaker. Contact sports such as football and rugby are not usually advised as your pacemaker box could be damaged.

### Driving

You must inform the DVLA that you have a pacemaker.

- If you drive a car, motorcycle or light goods vehicle (Group 1) you must not drive for one week following surgery.
- If, however, you drive large goods or passenger carrying vehicles (Group 2) you are disqualified from driving for 6 weeks. Re-licensing after this time will be with a short-term 3 year licence and you will require a cardiac assessment to qualify.



### **Travelling**

Some pacemakers are programmed to lower the heart rate at night, by way of a built in clock. If you are going to travel through different time zones you may have to have this adjusted.

### **Insurance**

Even though you can expect to feel well after having your pacemaker fitted, you do still have a heart condition. So it makes sense to tell your insurance company in case they refuse compensation or benefits in the future because you failed to disclose details. Compare companies before paying a higher premium.

### **Emotional aspects of having a pacemaker**

It is likely that you may have some fears about having a pacemaker.

The realisation that your heart is not completely perfect may make you feel vulnerable.

It is normal to have these feelings and it can help a lot to talk about them to someone close to you and seek some support for how you feel.



**Arrhythmia Alliance**

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Warwickshire

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24-hour helpline: 01789 450787

Email: [info@arrhythmiaalliance.org.uk](mailto:info@arrhythmiaalliance.org.uk),

Website: [www.arrhythmiaalliance.org.uk](http://www.arrhythmiaalliance.org.uk)

**USEFUL  
ADDRESSES AND  
WEBSITES**

**Phone/Textphone the Chest,  
Heart & Stroke Advice Line for  
confidential, independent advice  
from one of our nurses.**



**The line is open  
Monday – Friday  
9.30 – 12.30 and 1.30 – 4.00**

**0845 077 6000**

**Charged at local call rate.**

**Out of hours answering machine.**

**Email: [adviceline@chss.org.uk](mailto:adviceline@chss.org.uk)**

**Fax: 0131 220 6313**

The information contained in this booklet is based on current guidelines and is correct at time of printing. The content is also put out to peer, patient and expert review. If you have any comments about this booklet please contact Lorna McTernan, Health Information Manager, at the address on the facing page.

# HEART PUBLICATIONS

Booklets		Factsheets - Free	
<b>H1</b>	Living with Angina	<b>F2</b>	Salt
<b>H2</b>	Reducing the Risk of Heart Disease	<b>F3</b>	Cholesterol
<b>H3</b>	Understanding Heart Disease	<b>F4</b>	Warfarin
<b>H4</b>	Living with High Blood Pressure	<b>F6</b>	Holidays
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<b>H6</b>	Living with a Pacemaker	<b>F8</b>	Suggested booklet
<b>H7</b>	Heart Attack: A Guide to your Recovery	<b>F13</b>	Air travel for people affected by chest, heart and stroke illness
<b>H8</b>	Understanding Heart Valve Problems	<b>F17</b>	Diabetes: links with heart disease and stroke
<b>H9</b>	Understanding Atrial Fibrillation	<b>F18</b>	Coping with tiredness
<b>H10</b>	Living with an ICD	<b>F19</b>	Managed Clinical Networks and You
<b>Videos and DVDs</b>		<b>F20</b>	Illustrated risk factors (ethnic target)
<b>H5V</b>	Living with Heart Failure Video: £5.00	<b>F21</b>	Illustrated risk factors (general target)
<b>H5D</b>	Living with Heart Failure DVD: £5.00	<b>F22</b>	How to make the most of a visit to your doctor
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<b>H7D</b>	Heart Attack: A guide DVD: £5.00	<b>F24</b>	Healthy eating
		<b>F26</b>	Understanding help in the community
		<b>F28</b>	Glossary
		<b>F30</b>	Just move!

A full publication list is available from Head Office.

65 North Castle Street, Edinburgh EH2 3LT  
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Up to 100 booklets free

Up to 100 factsheets free

Name: \_\_\_\_\_

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## WHERE TO FIND US

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Open Mon – Fri

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Glasgow G44 3BL

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5 Mealmarket Close

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Open Mon – Fri

Coffee shop open

Mon – Sat

Website: [www.chss.org.uk](http://www.chss.org.uk)

Chest, Heart & Stroke Scotland is an autonomous Scottish Charity. We receive no government funding and rely entirely on public subscription to fulfil our programme of activities.

We need £5 million a year to fulfil our commitment to improving lives for Scottish people. We need your help and your money to help others. You can help by volunteering your time as a fundraiser, VSS volunteer or support your local Regional office. You can send a donation, remember us in your Will, take out a Deed of Covenant or organise a fundraising event.

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**If you would like to speak to one of our Advice Line nurses, in confidence, phone/minicom Chest, Heart and Stroke Scotland Advice Line**

**Monday – Friday**

**9.30am - 12.30 and 1.30pm - 4.00pm**

**0845 077 6000**

**Fax us: 0131 220 6313**

**Email us: [advice@chss.org.uk](mailto:advice@chss.org.uk)**

**Text us: text chss followed by your message to 07766 40 41 42**

Chest, Heart & Stroke Scotland and CHSS are operating names of The Chest, Heart & Stroke Association Scotland, a registered Charity No. SCO18761

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**Chest  
Heart  
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