



Wolff-Parkinson-White syndrome

This information sheet from Great Ormond Street Hospital (GOSH) explains Wolff-Parkinson-White (WPW) syndrome, what causes it and how it can be treated.

What is Wolff-Parkinson-White syndrome?

Wolff-Parkinson-White syndrome is a congenital (present at birth) condition that affects the electrical system within the heart.

The heart has an electrical system that makes it pump. The normal electrical impulse starts in a specialised area of heart tissue in the right atrium called the SA Node. It then passes from the right atrium through to the ventricles via the AV node. As the impulse passes through the atrium it makes it pump blood into the ventricle. It has the same effect when it passes through the ventricle.

This electrical impulse travels through the heart each time it beats. It is something that happens naturally – it cannot be felt.

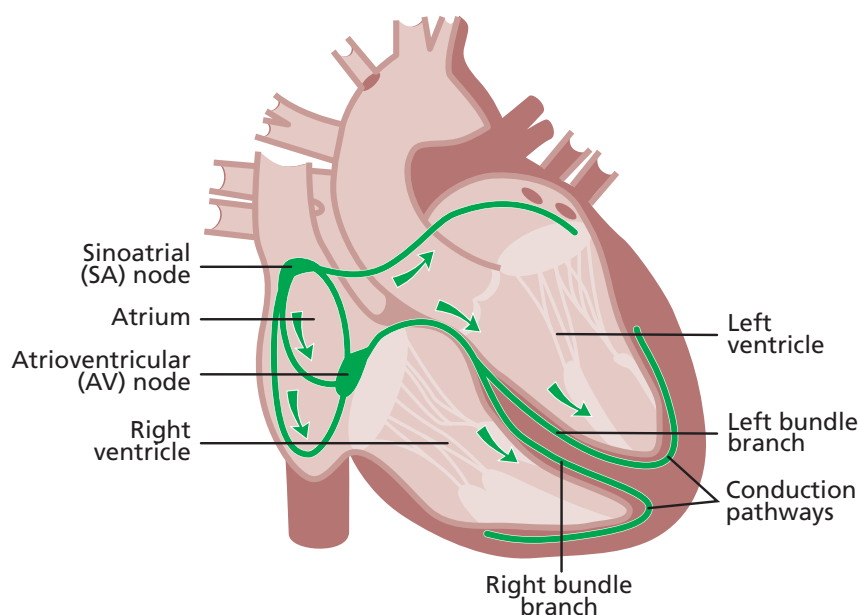
In Wolff-Parkinson-White syndrome, there is an extra electrical connection which causes the heart to 'short circuit', leading to an increased heart rate. In a small proportion, around 10 per cent, there may be more than one extra pathway.

What causes Wolff-Parkinson-White syndrome?

The extra electrical connection found in Wolff-Parkinson-White syndrome develops early in pregnancy, while the baby is developing in the womb. One theory is that additional muscle fibre strands develop between the atrium and ventricle, causing the extra connection. Wolff-Parkinson-White syndrome is the most common cause of abnormal heart rhythms (arrhythmia) [<link to existing info sheet>](#). It occurs more frequently in males than females and in the majority of cases happens 'out of the blue'. In a very small number of cases, it is passed on from parent to child.

What are the signs and symptoms of Wolff-Parkinson-White syndrome?

The extra electrical connection causes episodes where the heart rate suddenly quickens to an abnormally fast rate, often 200 beats per minute. The fast heart rate (supraventricular tachycardia or SVT) can cause chest pain, breathing difficulties



and heart flutters. In the majority of cases, the heart rate corrects itself to return to a normal rhythm. The frequency of these episodes varies from person to person. The length of time that an episode lasts also varies from person to person.

Fainting or 'blacking out' is rare and usually only occurs after a prolonged period of heart racing, lasting more than 30 minutes.

It is possible to have the additional pathway(s) without having any symptoms. This type of Wolff-Parkinson-White syndrome has an increased risk of heart racing later in life and a small risk of sudden death. Part of the evaluation from the Cardiology team will be to ensure that patients who maybe at increased risk are identified.

How is Wolff-Parkinson-White syndrome diagnosed?

Wolff-Parkinson-White syndrome can be diagnosed by accident, if a person has an electrocardiogram (ECG) as part of a general check-up for instance. Very rarely, it is diagnosed after sudden unexpected death in the family. In most cases, it is diagnosed after symptoms of heart racing.

The doctor will take a clinical history – that is, what symptoms occurred and how long they have been present. Wolff-Parkinson-White syndrome is confirmed using an ECG, which shows abnormal rhythm during an episode. Sometimes it is difficult to record an episode when it is actually happening, so the doctor may suggest an exercise test to bring on an episode. Otherwise, they may suggest having an ECG over a 24-hour period or longer or having an implantable loop recorder. An electrophysiological (EP) study is used to locate the extra pathway.

If there is a WPW pattern on the ECG, the doctors will aim to not only identify and treat symptoms but also carry out tests that can include a 24 hour ECG, exercise test and EP study, to ensure that the pathway is not dangerous.

How is Wolff-Parkinson-White syndrome treated?

In some people, the symptoms of an episode happen so rarely or to such a mild degree that no treatment is needed. If an episode lasts more than 30 minutes or the person feels faint or collapses, they should be taken to the nearest Accident and Emergency (A&E) department immediately.

The doctors may use a medicine called adenosine or cardioversion to shock the heart back into a normal rhythm.

The most effective long term treatment for Wolff-Parkinson-White syndrome is cardiac ablation. The doctor will use either radio frequency ablation or cryoablation on the affected area, which should stop the abnormal signals. Ablation works by using a targeted beam of energy to destroy the tissues causing the abnormal signals. Radio frequency (RF) ablation burns the area causing the abnormal rhythms and is effective in around 95 per cent of cases. An alternative method, cryoablation, is used where RF ablation is not suitable. Cryoablation freezes the affected area and is effective in about 80 per cent of cases, but is safer to use in certain areas of your heart. This procedure is carried out at low risk and as a day case or with an overnight stay.

What happens next?

Ablation is successful in the vast majority of cases, so there are no further heart racing episodes or increased risk of sudden death or fainting episodes. As Wolff-Parkinson-White syndrome tends not be inherited, it is unlikely that any other members of the family will need to have their heart checked.

Further information and support

There are various organisations in the UK that support people with heart problems.

The biggest is the British Heart Federation – their helpline is on 0300 330 3311 or you could visit their website at www.bhf.org.uk

SADS UK can also offer help and support – call them on 01277 811 215 or visit their website at www.sadsuk.org.

You could also contact Cardiac Risk in the Young (CRY) on 01737 363 222 or visit their website at www.c-r-y.org.uk.

Arrhythmia Alliance offers support to anyone affected by abnormal heart rhythms. Call them on 01789 450 787 or visit their website at www.hearhythmcharity.org.uk