What does having a normal sinus rhythm with ventricular ectopics mean? Information for young people

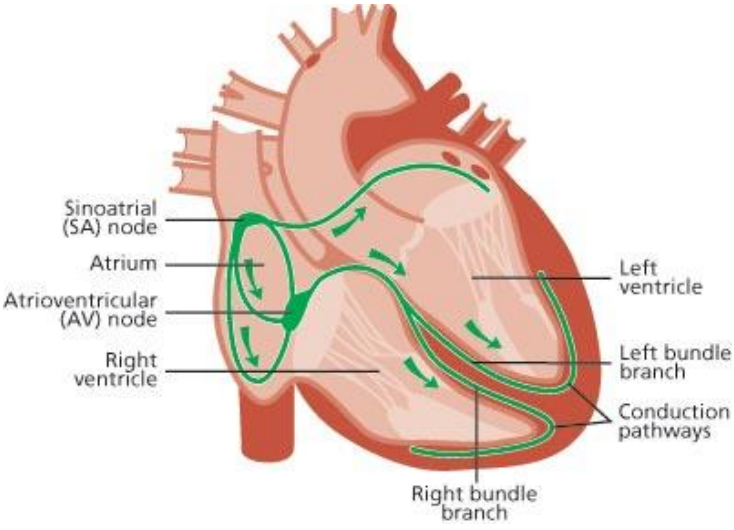
Ventricular ectopics are a type of arrhythmia or abnormal heart rhythm. It is caused by the electric signals in the heart starting in a different place and travelling a different way through the heart. If it happens occasionally, it should not cause any problems but if it happens a lot, you will need to have treatment. This information sheet from Great Ormond Street Hospital (GOSH) explains ventricular ectopics and how they can be treated.

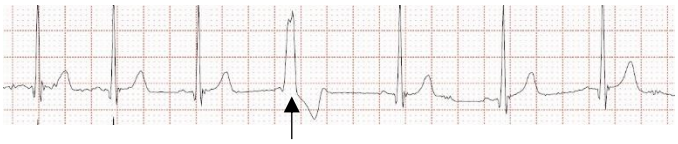
The heart has an electrical system that makes it pump. The normal electrical impulse starts in a specialised area of heart tissue in the right atrium called the SA Node. It then passes from the right atrium through to the ventricles via the AV node.

As the impulse passes through the atrium it contracts forcing it to 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 – you can't feel it.

With ventricular ectopics, the electrical impulse starts from the ventricles before an electrical impulse can be made by the atrium and causes the heart to beat in a different way for that beat before resuming a regular rhythm.

The normal heart beat causes the ventricles (pumping chambers) to squeeze or contract at the same time (in synchrony). When you have an ectopic beat, the heart beat starts on one side of the muscle of the ventricles so one side contracts and pumps blood before the other. This is very unlikely to cause any harm if this is happening occasionally. However, if this becomes more frequent it can affect how your heart works.





What causes ventricular ectopics?

Almost all of us will have some ventricular ectopic beats – this is normal and most of the time these don't cause any problems. Sometimes normal childhood development, hormone changes, medications, and lifestyle choices can trigger ectopic beats. Other more serious causes can be: infection, muscle disease, channel ion disease, and electrolyte imbalance. Although these causes are more serious they are also very rare, you will have tests at the hospital to investigate these.

What are the symptoms of ventricular ectopics?

Ventricular ectopics can be diagnosed by accident, if a person has an electrocardiogram (ECG) as part of a general check-up for instance.

If symptoms are present, they can include dizziness, palpitations, tiredness, fainting (syncope) or almost fainting (pre-syncope). If you are having episodes of fainting or collapse you need to let your doctor know. If you are experiencing symptoms in the red flags box you should seek immediate medical attention.

In younger children and babies who are unable to say what they are feeling they may have symptoms such as reduced feeding, or breathlessness.

You may notice symptoms are sometimes worse with lack of sleep and stress. Most people are not aware they are having ventricular ectopics so you may never experience any symptoms.

Red flags

- Changes in behaviour, lethargy, irritation
- Dizziness or feeling faint (pre-syncope)
- Collapse (syncope)
- Changes in circulation: colour change such as dusky or pale skin, clamminess or cool hands and feet
- Breathlessness or breathing difficulties

How are ventricular ectopics diagnosed?

A variety of tests will be performed to check how your hearts electrical system is working as well as cardiac function. Our routine screening includes:

- An **ECG** records the electrical signal as it is conducted throughout the heart. It is a simple test performed by placing sticky electrodes on the child's chest, legs and wrists. An ECG is entirely safe, takes a few minutes and causes no pain, although the child may be anxious about the stickers and connecting wires.
- An **Echo** is an ultrasound scan of the heart. A picture of the heart is produced from which an accurate assessment of the size and function of the heart can be made. The scan takes from 30 to 40 minutes. As before this test is not painful, but children sometimes find the jelly on the probe a bit uncomfortable. Children can watch their favourite videos during the scan.
- An **exercise test** is a specially modified test that assesses the rhythm and function of the heart at a faster rate, while the child is on an exercise bicycle or a treadmill. Blood pressure and breathing are also monitored during the test. This test is

usually only performed on children over the age of eight years due to their size.

Exercise testing also provides us with an objective measurement of improvement, stability or worsening of heart function over time. The test takes approximately 45 minutes and allows symptoms not obvious at rest to become apparent when the heart is working harder. We recommend children to wear loose comfortable clothing and trainers for the test.

- An **MRI scan** uses a magnetic field rather than x-rays to take pictures of your child's body. The MRI scanner is a hollow machine with a tube running horizontally through its middle. Your child will lie on a bed that slides into the tube. An MRI scan usually lasts between 20 minutes and an hour.
- A **24-hour ECG recording** (or Holter) uses a small box similar in size to a mobile phone, from which three leads are attached by sticky pads to your child's chest. This is an ECG monitor that continuously records the heartbeat over 24 to 48 hours. Children wear the monitor under their clothes and can continue with their normal daily life including sport and exercise. You and your child will be asked to document your child's activities during the 24 to 48 hour period to match with the recording when the box is analysed. When the test is finished, you will be required to return the monitor to GOSH so that the results can be analysed.
- **Blood tests** are taken to look for electrolyte changes and infection markers.

How are ventricular ectopics treated?

Medication, usually a beta blocker or a calcium channel blocker can help to control the area sending out the extra heart beats and improve symptoms. Sometimes when you start these medication you may feel dizzy and tired but this should settle over time.

A procedure called an electrophysiology study and ablation may be suggested. The doctor will use either cryoablation (freezing therapy) or radio frequency ablation (heating therapy) 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.

Conditions can progress and it is therefore important to keep you under monitoring. Sometimes the percentage of ventricular ectopics naturally decreases and no further monitoring is required. In rare cases, they can be an early sign of more serious conditions that have not fully developed, which is why you will be followed up and you should make any medical teams know in the future that you have had these investigations.

Can I drink caffeinated drinks?

Tea and coffee can be consumed within recommended guidelines unless you have been advised otherwise, energy drinks contain high levels of caffeine and should be avoided.

Can I exercise?

Exercise limitations will be discussed with you in clinic, most patients are able to exercise as they would normally. If you have experienced any fainting this should be discussed with your doctor, this doesn't mean you will not be able to exercise but should have a plan of how to do so safely.

Any questions?

You can get in touch with the Arrhythmia Service on 020 7405 9200 extension 5298, email them on gos-ecg.tr.gosh@nhs.net or contact them via MyGOSH once you have registered. More information about MyGOSH is at www.gosh.nhs.uk/your-hospital-visit/mygosh

Arrhythmia Alliance – call 01789 867 501 (24 hour helpline) or visit their website at www.heartrhythmcharity.org.uk

British Heart Foundation – call their Heart Helpline on 0300 330 3311 or visit their website at www.bhf.org.uk