



# Atrial septal defect (ASD)

**This information sheet from Great Ormond Street Hospital explains the causes, symptoms and treatment of an atrial septal defect and where to get help.**

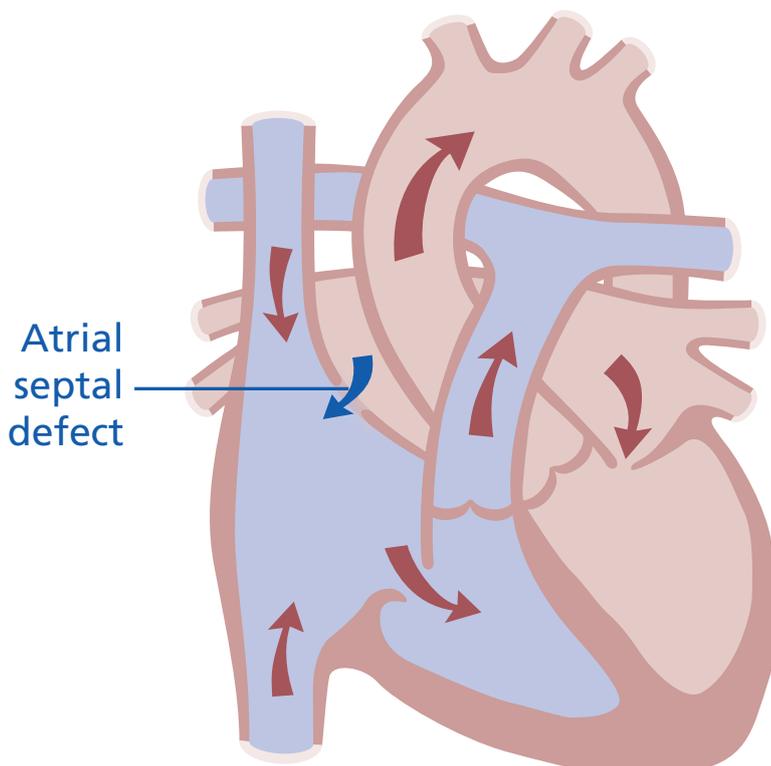
The atrial septum is the wall of tissue and muscle between the upper two chambers (atria) of the heart. An atrial septal defect (ASD) is a hole in this wall.

A hole or defect such as this allows both upper chambers of the heart (atria) to communicate and permits an abnormal flow of blood from one chamber to the other. This means that the oxygen-rich and the oxygen-poor blood, instead of being kept separate, are allowed to mix and flow from the heart to the body and lungs.

This type of heart problem can occur on its own, but may also occur together with other forms of congenital heart disease.

There are different types of atrial septal defect, depending on the location of the hole in the atrial wall:

- **Central defects of the atrial wall (secundum type defects)** This is the most common type of ASD. All babies have a small hole in the atrial septum while in the womb, covered by a small flap called the foramen ovale. If the hole remains after birth, it is called a patent foramen ovale (PFO).
- **Low defects of the atrial wall (primum ASD)** This type of ASD occurs together with an abnormality of the one-way valve between the upper and lower left heart (the mitral valve). It can also be part of a more complex type of heart problem called an atrioventricular septal defect (AVSD).
- **High defects of the atrial wall (sinus venosus ASD)** This type of ASD is commonly seen together with an abnormal position of the right upper pulmonary vein (one of the blood vessels bringing oxygenated blood back to the heart).





## What causes atrial septal defect?

Atrial septal defect is a congenital heart defect (present when your child was born). The exact cause of congenital heart defects isn't often clear. Most heart problems in children are present from birth due to an anomaly in the way the heart forms during the very early stages of pregnancy.

The reasons for this may be due to a number of factors, such as genetics, environmental factors or infection. The likelihood that a heart problem will have been caused directly by anything you have done during pregnancy or early life is very rare.

## What are the signs and symptoms of atrial septal defect?

Children with an atrial septal defect (or PFO) may only show mild symptoms of having a heart condition, or may not have any symptoms at all.

Frequent chest infections can be a sign that the oxygenation process is not working efficiently due to extra blood flow to the lungs.

Large defects can cause extra strain on the heart causing the right-hand side of the heart to dilate (stretch). Babies with large defects may be breathless and struggle to feed and gain weight. Older children may show a reduced tolerance for exercise.

The extra flow of blood to the lungs usually produces heart murmurs in children (an abnormal heart sound) that can be detected on routine health checks. This is a common reason for referral.

## How is atrial septal defect diagnosed?

Your child will have an echocardiogram, a non-invasive, high frequency ultrasound scan of the heart. It allows doctors to see the structure of the atrial valve and assess any abnormal blood flow through the heart, as well as the overall performance of the heart and circulatory system.

They may also have an electrocardiogram (ECG). This measures electrical activity in the heart to see how well it is working. Doctors will look to see whether the right side of the heart has thickened and whether it is working harder than it should be.

## How is atrial septal defect treated?

The treatment your child needs will depend on the severity of the defect.

Small, central atrial defects can close spontaneously after a few years, and your child may only require regular supervision in an outpatient clinic.

If the defect is slightly larger, and surrounded by good margins of heart tissue, a key hole procedure known as cardiac catheterisation can be used to close the hole. This is usually undertaken as a day-case procedure.

Large central defects or other types of ASD may require open-heart surgery for repair. The type of operation depends upon the position of the defect and any associated tissue damage (lesions).

This type of child heart surgery is the most straightforward type of operation that our surgeons perform.



## What happens next?

The long-term outlook for central types of atrial septal defect (ASD) is very good, regardless of whether they require cardiac catheterisation or heart surgery.

Children with low defects of the atrial wall (known as primum defects) will usually require regular check-ups as an outpatient to monitor their progress.

However, most children do not need further surgery, and go on to lead normal healthy lives.

## Further information and support

Our Cardiorespiratory Unit regularly refers to information published by the British Heart Foundation (BHF) and the Children's Heart Federation when explaining atrial septal defect (ASD) to our patients and their families.

- Download the BHF atrioventricular septal defect factsheet (PDF)
- Read about atrial septal defect on the Children's Heart Federation website

### Notes

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Compiled by the Web team in collaboration with the Child and Family Information Group

Great Ormond Street Hospital for Children NHS Foundation Trust  
Great Ormond Street  
London WC1N 3JH

[www.gosh.nhs.uk](http://www.gosh.nhs.uk)