

# FACTSHEET

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## Arterio-venous malformation of the brain

### What is it?

An arterio-venous malformation (AVM) is a condition that develops during growth in the womb. It occurs in the small capillaries between an artery and a vein. Enlarged blood vessels are produced, which can form a collection of blood vessels that may look like a "bag of worms". The pressure in the enlarged blood vessels causes movement (or shunting) of blood from artery to vein across the AVM.

### Where does it occur?

AVMs can be found anywhere in the brain and may extend from the outer surface to the inner cavities of the brain (ventricles).

In the rare *Vein of Galen Malformation*, an AVM involves one of the large veins of the brain. The ordinary flow of the fluid in the brain ventricles (cerebro-spinal fluid) is interrupted. The pressure of this fluid is increased. This may cause enlargement of the ventricles ("hydrocephalus"). Occasionally brain and spinal cord AVMs may also be found in association with skin lesions (angiomas).

### What are the symptoms?

Although an AVM occurs in the brain before birth, only a small portion of the affected children show symptoms straight away. Many never have any problems. An AVM is usually recognised when bleeding has occurred into or around the brain.

Symptoms may include:

- Severe headache
- Vomiting
- Neck stiffness
- Seizures (fitting) - sometimes epileptic fits may occur without any bleeding.

### AVM and babies

When a large AVM is present in a newborn baby, the symptoms may cause heart problems. This is because the pressure in the AVM moves (or shunts) blood from the arteries into the veins and causes an increase of blood flow in the veins. This puts an increased load on the baby's heart.

### How is it diagnosed?

Your doctor will sometimes be able to hear the increased blood flow in the head or neck through a stethoscope. The noise is called a bruit (broo-ee).

An AVM is usually diagnosed only after symptoms have occurred (see above).

A CAT scan (x-ray) or MRI scan is used to diagnose the AVM (see 'CT factsheet' and 'MRI factsheet' for more information).

Injecting dye into a blood vessel that feeds blood into the brain shows the AVM on x-rays (angiogram).

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## What is the treatment?

AVMs are quite complicated and there are a few different treatment options. Most AVMs may require surgery, radio surgery, or endovascular treatment or a combination of them all. Your doctor may recommend surgery, as the risk of repeated bleeding is high. However, this is not always the case. Ask your doctor about the choices of treatment for your child.

### Remember:

AVM is usually diagnosed only after symptoms occur.  
Ask your doctor about the choices for treatment.

### For more information:

- The Brain Foundation  
[www.brainfoundation.org.au/medical-info/11-arteriovenous-malformation](http://www.brainfoundation.org.au/medical-info/11-arteriovenous-malformation)
- Great Ormond Street Hospital  
[www.gosh.nhs.uk/medical-conditions/search-for-medical-conditions/arteriovenous-malformations/arteriovenous-malformations-information](http://www.gosh.nhs.uk/medical-conditions/search-for-medical-conditions/arteriovenous-malformations/arteriovenous-malformations-information)