

# Hydrocephalus

## Information for patients, parents and guardians

Hydrocephalus comes from the Greek word meaning water in the head.

It can occur at any age from birth to adulthood, affecting both boys and girls. The way we manage hydrocephalus depends on the cause.

The watery fluid is cerebrospinal fluid (CSF) which is made in the ventricles of the brain. It constantly circulates through the ventricles, around the spinal cord and over the surface of the brain, where it is absorbed back into the bloodstream.

Hydrocephalus can develop slowly or quickly, as a result of the fluid being prevented from circulating and/or being absorbed. This leads to an excess amount of fluid in the system. Very rarely too much fluid is produced, with the same effect. When this happens the ventricles become enlarged, which puts pressure on the delicate brain tissue.

There is a build up of pressure in the head, which can lead to some of the signs and symptoms listed opposite. If left untreated there can be permanent damage to the child's vision and a deterioration in normal development.

Your child can become unwell very quickly, which will require urgent surgery.

### Signs and symptoms of hydrocephalus

#### Babies

- increasing head size
- tense bulging fontanelle (the diamond-shaped patch on the top of your baby's head)
- irritable and restless
- high pitched cry
- cries when held
- eyes appear to be looking down (known as sun-setting eyes)
- easily visible (distended) scalp veins
- changes in feeding

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## Children

- headache
- nausea and vomiting
- blurred or double vision
- irritable
- drowsiness
- lethargy and poor concentration
- seizures

## Diagnosis and treatment

Your child will have a computerised tomography (CT) scan or a magnetic resonance imaging (MRI) scan to confirm the diagnosis and find the cause of the hydrocephalus.

A CT scan uses x-rays and an MRI scan uses magnets to take detailed pictures of the brain.

They are completely painless, but require the patient to stay still while the pictures are taken.

Your child might therefore need sedation or a short anaesthetic so the scan can be carried out accurately.

The neurosurgeon, a specialist doctor, will discuss the results with you and recommend the appropriate treatment. Most forms of hydrocephalus require an operation to achieve a more normal flow of the CSF and relieve the pressure on the brain.

This can be achieved by a procedure called an endoscopic third ventriculostomy or the insertion of a ventricular-peritoneal (VP) shunt.

## Endoscopic third ventriculostomy (ETV)

If your child has an ETV, the surgeon will make an opening through a part of the brain called the third ventricle, using an endoscope (a thin telescope). This allows the CSF to flow through into the subarachnoid space, bypassing any blockage further down.

This is only suitable in for certain types of hydrocephalus and isn't usually performed on babies and young children.

The surgery takes two to three hours under general anaesthetic and your child will return to the ward with a small wound on the side of their head, which will be sealed with paper stitches called steristrips.

## **VP shunt**

A VP shunt is designed to redirect the excess CSF from the brain to the abdominal cavity, where it will be absorbed.

The shunt is completely enclosed inside the body and consists of two flexible silicone catheters that are connected by a valve which controls the rate of drainage and prevents back flow. The tubing is coiled in the abdominal cavity to allow for growth.

Very occasionally the CSF is diverted into the heart and this is called a VA shunt.

The surgery takes two to three hours under general anaesthetic and your child will have small wounds on their head and abdomen, which will be covered with a dressing.

## **Before surgery**

The surgeon will explain the procedure to you and you will be asked to sign a consent form.

An anaesthetist will see you and your child to discuss the anaesthetic and a blood sample will need to be taken.

Your child will not be allowed to eat and drink before going for surgery. They must not have any food or milk for six hours before the operation. They can drink clear fluids up to two hours before the operation.

The ward nurses and play specialist will be available to discuss any concerns and help prepare your child for surgery.

One parent can accompany your child to theatre and stay with them until they are asleep.

## **After surgery**

Your child will return to the ward having spent a short time in recovery. One parent is usually allowed into recovery once your child is awake. Your child may be sleepy for a few hours, and the nurses will observe them closely and give pain relief medicine if required.

Your child may have drip in their arm to give them fluids until they are drinking. They can start drinking when they feel able. It is best to start with clear fluids before moving onto milk or food. Sometimes they feel a bit sick and can take a while to get back to normal eating and drinking.

They may develop a headache due to the change in pressure in their head. If so they should sit up slowly and leave moving until the next day.

Any dressings can be removed the next day. The paper stitches can be left to come off over the next week.

Your child will have to stay in hospital for at least two days. Length of stay in hospital may depend on the cause of the hydrocephalus and if any further treatment or investigation is required. In most cases shunts are intended to stay in for life, although revisions may be necessary from time to time

## After leaving hospital

- Your child should gradually return to normal activities.
- They can have paracetamol (Calpol) for pain if required, following the instructions on the bottle.
- Wash their hair gently with mild shampoo and allow the paper stitches to come off.
- Older children should avoid contact sports such as rugby and boxing for six months.
- You should inform your child's teacher of their operation.

## Things to be aware of

You should look out for:

- any of the signs and symptoms of hydrocephalus as described on page one of this factsheet
- any inflammation of the wound
- a high temperature.

These could indicate a problem with the shunt or third ventriculostomy, such as a blockage or infection, which could require further surgery.

## Follow-up care

Your child will be seen by the advanced nurse practitioner or children's neurosurgery specialist nurse on the ward two weeks after surgery.

The neurosurgeons will see them in three months.

## Further information

If you have any concerns please contact the ward on 023 8120 6692 or contact your GP.

Useful information about hydrocephalus can be found on the SHINE website: [www.shinecharity.org.uk](http://www.shinecharity.org.uk)

If you need a translation of this document, an interpreter or a version in large print, Braille or on audio tape, please telephone **023 8120 4688** for help.

[www.childrenshospital.uhs.nhs.uk](http://www.childrenshospital.uhs.nhs.uk)