

# Ventriculo-peritoneal Shunt Insertion Surgery in Children and Young People

**This leaflet explains shunt insertion in children and young people in the management of hydrocephalus, including the benefits, risks, any alternatives and what you can expect when you come to hospital.**

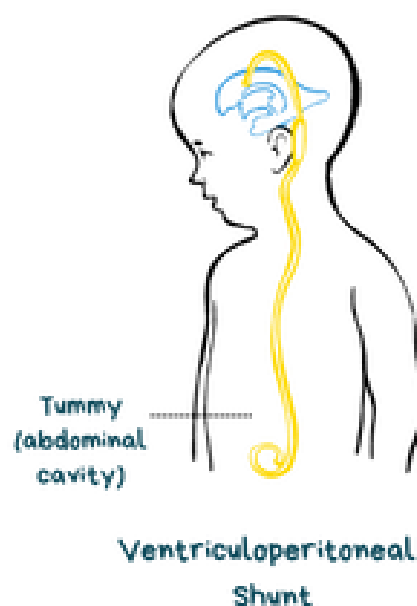
**If you have any further questions, please speak to a doctor or nurse caring for your child.**

## What is a shunt?

The most common treatment of hydrocephalus is the surgical placement of a shunt.

A shunt is a soft, flexible tube (about 3mm in diameter) which is placed in the ventricle fluid spaces inside the brain (this is the top end or proximal catheter). This tube is attached to a valve that controls the flow of the cerebro-spinal fluid (CSF) through the shunt. The tube is then tunnelled underneath the skin to an area of the body where the fluid can be absorbed (this is the bottom end or distal catheter). The most common area to drain the CSF into is the lining of the abdominal cavity (the peritoneum). This is called a ventriculo-peritoneal shunt (VP shunt).

Less often, the shunt is connected from the brain to other parts of the body. A shunt from the brain to the lining around the lung



(pleural space) inside the chest is called a ventriculo-pleural shunt. A shunt from the brain to veins draining into the heart is called a ventriculo-atrial shunt.

*Image provided courtesy of Harry's Hydrocephalus Awareness Trust (HAT).*

## **Programmable / Fixed Valves**

Your child's neurosurgeon will decide which type of shunt tube is best for your child. All shunts will only allow CSF flow in one direction. Some shunts may also have a small plastic bubble under the skin known as a reservoir at the head end that the neurosurgical team can use to take samples of CSF for testing.

The valves come as fixed pressure or programmable pressure. The fixed pressure valves are set to a certain pressure and cannot have that setting changed. These are the most common type of valve used.

Sometimes a patient may require a valve where the settings can be adjusted. This is called a programmable shunt valve.

A programmable shunt valve allows the surgeon to program the shunt to control how much CSF is draining. It is important to remember the pressure setting of the shunt and that the setting of this shunt can be changed by a magnet. This will be written in your shunt pack.

If at any point your child with a programmable shunt valve requires an MRI, you must make sure to inform the MRI department that s/he has a programmable shunt and at what setting it is programmed. Depending on the brand of valve, the setting is checked using different methods. Checking the setting of the valve is non-invasive and shouldn't cause any pain.

If your child requires an audiology consultation you must also inform the department prior to having an audiology assessment. It is not advised that newborn hearing checks are carried out in the community and your child will need to be referred to audiology to carry out their hearing check.



*This is an example of shunt valve from Codman/Integra, other brands are available. Image provided courtesy of Integra LifeSciences*

### **Why does my child need a shunt inserted?**

Shunts are inserted to manage hydrocephalus, which is a build-up of CSF within the fluid spaces in the brain. If left untreated, hydrocephalus causes increased pressure within the brain which can make your child very unwell and if left for too long, can be a threat to life. The shunt will drain the excess fluid so it can be re-absorbed and therefore relieve the symptoms of hydrocephalus.

### **What are the risks?**

The risks for surgery will be explained to you during the consent for surgery taking. The risk with shunts once inserted can be infection, this is more likely to happen shortly after the operation. Shunt infections require urgent attention and you should return to hospital to seek treatment for this.

### **Signs of shunt infection include:**

- Puffiness or redness of the skin around the tube and at incision (cut) sites
- Fever / high temperature
- Stiff neck
- Dislike of lights (photophobia)

- Fluid coming out of the incision (this can be clear or yellow/pus-like)
- Loss of appetite or not eating well
- Feeling sick with or without vomiting
- Headache
- Visual disturbance (blurry eyesight)
- Abdominal (tummy) pain
- Generally feeling unwell .

Another risk of shunt insertion is blockage or malfunction of the shunt itself. The symptoms of this are symptoms of high pressure which you may have seen prior to the shunt insertion. If you suspect your child's shunt is not working as it should, this is an emergency and will require you to take your child to hospital for review.

Further Information on what to look out for post shunt insertion will be included in your child's shunt information pack.

### **Are there any alternatives?**

There are no effective medicines for hydrocephalus and most children require surgery. Another surgery to manage hydrocephalus is called an endoscopic third ventriculostomy (ETV). The surgical options will be discussed with you at the point of diagnosis.

### **Asking for your consent**

It is important that you feel involved in decisions about your child's care. For some treatments, you will be asked to sign a consent form to say that you agree for your child to have the treatment and understand what it involves. You can withdraw your consent at any time, even if you have said 'yes' previously. If you would like more details about our consent process, please ask for a copy of our policy.

## **What happens during shunt insertion surgery?**

Your child is taken to the operating theatre suite and goes to sleep under general anaesthesia so that they will not feel any pain during the operation. Areas on the head and an area on the abdomen (belly) are scrubbed with a special soap. A small area of the scalp will need to be shaved. The surgeon makes incisions (cuts) on the head and abdomen and the shunt tubing is tunnelled under the skin. The ventricular (top) end of the shunt is passed through a small hole in the skull made by the surgeon and gently passed into the ventricle. The abdominal (bottom) end is passed through a small opening in the abdomen.

The incisions are then closed using staples or stitches. The operation takes between one and two hours.

## **What happens after shunt insertion surgery?**

Your child is then taken to the recovery room where they will wake up soon after the operation. You will be able to see your child as soon as they wake up. Your child will spend about one to two hours in recovery and then will be returned to their bed on the neurosciences / surgical ward.

Your child may have a head bandage and will have a dressing on their head and another dressing on the abdomen, neck or chest, depending on the type of shunt. The nurses will check your child often and they will also be checking to see how easily your child wakes up, even at night. Your child will have an intravenous (IV) line after surgery until they are drinking well. For some children (under one year) we may give specific bed rest advice to prevent low pressure headaches.

Your child's neurosurgeon will tell you when your child can start normal activity, such as sitting up and walking. After your child has

recovered from the surgery they can go home. This is usually one to three days after surgery.

### **How will my child's pain be managed?**

After the operation, your child may have some pain at the operative site and their nurse will give them regular pain relief medicines, usually both paracetamol and ibuprofen. We find these medications generally provide a good level of pain control for this type of surgery, however if you feel that they are in pain then please speak to your child's nurse and additional analgesia can be considered. Your allocated nurse will be assessing pain control regularly throughout the day and night and may ask your child to score or rate their pain. We take pain management in children seriously and if you have any concerns about pain management, please speak to the neurosurgical team or allocated nurse.

### **What do I need to do after I take my child home?**

Recovery from a shunt insertion or revision is short. Your child can go back to school after a week or two once they feel well and can start light activity once they feel up to it. We advise the dressings stay on for around a week and can then come off for a gentle hair wash and shower. We suggest not submerging the wounds in water until fully healed. Further wound advice can be found on the wound care leaflet.

You will need to monitor your child for signs of shunt infection or malfunction. More information can be found in the shunt information pack or you can contact the CNS team for any further information.

### **Will my child have a follow-up appointment?**

Your child will be reviewed in clinic two to three months post shunt surgery to check the healing of the wound. After this, children with shunts have a clinic appointment yearly, usually in the nurse-led

clinic. This will either be face to face or a telephone appointment.

## **Useful sources of information**

### **Shine UK**

[Shine - Spina Bifida & Hydrocephalus](#) Tel: 01733 555 988

### **Harry's Hydrocephalus Awareness Trust (Harry's HAT)**

[Harry's HAT | Harry's Hydrocephalus Awareness Trust](#)

Tel: 07961 001 710

The book "Hydrocephalus, What I'd Wish I'd Known" is available via the website or ask your CNS team if they have a copy which you can have.

### **Hydro&Me**

[Hydro & me - hydroandme](#)

*This document is intended for information purposes only and should not replace advice that your relevant health professional would give you.*

## **Contact us**

### **Clinical Nurse Specialists in Paediatric Neurosciences (Monday to Friday 8am-5pm)**

Telephone: 020 8725 2649

E-mail: [paedneurocns@stgeorges.nhs.uk](mailto:paedneurocns@stgeorges.nhs.uk)

### **Out of hours:**

Nicholls ward 020 8725 3389 or 020 8725 2098

**For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit [www.stgeorges.nhs.uk](http://www.stgeorges.nhs.uk)**

## Was this information helpful? Yes / No

Please let us know, contact

[patient.information@stgeorges.nhs.uk](mailto:patient.information@stgeorges.nhs.uk) and include the leaflet title.

Thank you.

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## Additional services

### Patient Advice and Liaison Service (PALS)

PALS can offer you advice and information when you have comments or concerns about our services or care. You can contact the PALS team on the advisory telephone line Monday, Tuesday, Thursday and Friday from 2pm to 5pm.

A Walk-in service is available:

Monday, Tuesday and Thursday between 10am and 4pm

Friday between 10am and 2pm.

The Walk-in and Advisory telephone services are closed on Wednesdays.

Please contact PALS in advance to check if there are any changes to opening times.

PALS is based within the hospital in the ground floor main corridor between Grosvenor and Lanesborough wings.

**Tel:** 020 8725 2453 **Email:** [pals@stgeorges.nhs.uk](mailto:pals@stgeorges.nhs.uk)

### NHS UK

The NHS provides online information and guidance on all aspects of health and healthcare, to help you make decisions about your health. **Web:** [www.nhs.uk](http://www.nhs.uk)

### NHS 111

You can call 111 when you need medical help fast but it's not a 999 emergency. NHS 111 is available 24 hours a day, 365 days a year. Calls are free from landlines and mobile phones. **Tel:** 111



## AccessAble

You can download accessibility guides for all our services by searching 'St George's Hospital' on the AccessAble website ([www.accessable.co.uk](http://www.accessable.co.uk)). The guides are designed to ensure everyone – including those with accessibility needs – can access our hospital and community sites with confidence.



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