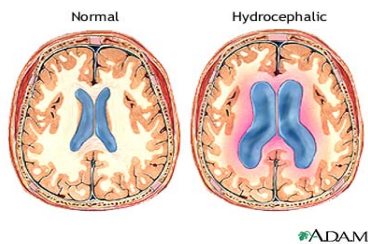


What is Hydrocephalus?

Hydrocephalus, or “water on the brain,” occurs when there is too much cerebrospinal fluid (CSF) in or around the brain. CSF is a fluid that is produced in the four ventricles, or cavities, of the brain which provide nutrients and normally protects the brain and spinal cord from injury. CSF is constantly being made in the ventricles and can produce up to a pint of CSF every day. This fluid is normally drained and excreted; however, in patients with hydrocephalus, too much CSF accumulates in the brain. The excess fluid creates pressure on the brain against the skull and causes neurological problems. If untreated this pressure can be fatal.



What is a Shunt?

A shunt is a thin tube that is placed under the skin and into your child's ventricle to drain the excess fluid from the brain. The tubing that is in your child's brain is connected to a valve which controls the drainage rate of the CSF. This valve can be either fixed, with a preset drainage rate, or a programmable shunt which is adjustable. The valve is connected to a second tube which drains the fluid into another part of your child's body, such as the belly. When working properly the shunt should fix the hydrocephalus, however careful monitoring is needed because there can be complications. It is important to remember though that your child can have a completely normal life if he or she has a shunt.

Potential Complications

While shunts are excellent at treating hydrocephalus, there are not perfect and can fail by obstruction, infection, or other complications.

Shunt Obstruction

The complete or partial blockage of the shunt causes “shunt malfunction.” This leads to fluid build up and symptoms of hydrocephalus to return.

Shunt Infection

Shunt infection is usually caused by a child's own bacteria. Shunt infection is not from exposure to other children or adults who are ill. Shunt infections are most likely to occur after a recent surgery. It might take days to weeks to appear, but can happen from one to three months after your child's surgery. After six months, any complications that occur are more likely to be from shunt malfunction rather than infection. The signs and symptoms of a shunt infection also include all the symptoms of a blocked or malfunctioning shunt.

Other Complications

Shunts are very durable but the parts of the shunt can break as a result of wear or the child's growth. Sometimes they move within the body from where they were originally placed. In these cases surgery may be required to fix or replace the malfunctioning shunt.

If a shunt is set to drain CSF too rapidly damage can be done to the brain. This can be corrected by your neurosurgeon, often without surgery, if brought to the doctor's attention quickly.

You are your son or daughter's best advocate and we rely on you to know your child and keep vigilant to see any dangerous symptoms.

When to Call for Help

Alert your doctor if you find any of the following symptoms:

- **Frequent vomiting**
- **Irritability**
- **Headache**
- **Sleepiness**
- Head enlargement
- Fontanels (the soft part of babies heads) are full and tense when the baby is upright and quiet
- Prominent scalp veins
- Poor appetite
- Blurry vision
- Loss of previous abilities (sensory or motor function)
- **Fever***
- **Swelling along the shunt tract***
- **Redness along the shunt tract***
- **Red streaks leading away from shunt***

*Fever and redness are potential indications of infection. These are far more likely in within 3 months of surgery.

(While symptoms of hydrocephalus and shunt malfunction are different between children, the symptoms that your child shows tend to be consistent between shunt malfunctions. For example, you will come to know that your child may not have headaches but does have frequent vomiting when having a shunt malfunction.)

Call 911 anytime you think you need emergency care. For example, call if your child:

- Losses consciousness
- Finds it hard to think, move, speak or see
- Begins to jerk or shake their body

What To Do If You Suspect a Shunt Malfunction

If you think your child is having symptoms of a shunt malfunction or infection, there is some important information that will help your doctor better treat your child.

- ✓ What are your child's exact symptoms?
- ✓ When did they start?
- ✓ How many times have the symptoms happened?
- ✓ On a scale from 1-10, how much pain is your child in?
- ✓ When was your child's last surgery?
- ✓ When was the last shunt malfunction?
- ✓ What symptoms did your child have last time?
- ✓ Is it a fixed or a programmable shunt?
- ✓ What is the shunt setting?
- ✓ What allergies does your child have?
- ✓ Does your child have a latex allergy?
- ✓ When was the last CT scan of your child done? (baseline CT scans should be done at least every other year)

If the situation is an emergency, call 911 or go to the Emergency Room immediately. If it is not an emergency, but you think it does relate to your child's shunt, **do not wait to call your doctor**. Call your neurosurgeon or see your primary care provider and determine if you need to be seen. CSF is constantly being produced and if it goes untreated it can build up and cause serious injury to your child.

Important Information:

Shunt Setting: _____

Date of Last CT: __/__/__ __/__/__ __/__/__ __/__/__ __/__/__

Primary Care Provider Number: _____

Contact Information

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Additional Hydrocephalus Information

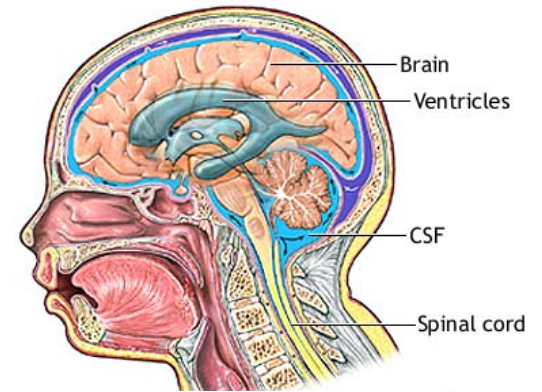
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Living With Hydrocephalus



A Guide For Parents

