
Hydrocephalus and Shunts

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What Is Cerebrospinal Fluid (CSF)?

Our brains make a special fluid called cerebrospinal fluid or CSF all the time. This fluid helps protect the brain and spinal cord. It moves through spaces, called ventricles, within the brain and then flows around the outside of the brain and spinal cord, keeping everything cushioned and healthy. This CSF eventually passes into the bloodstream.

The body usually makes and drains CSF at the same rate. But sometimes the fluid can't drain fast enough. When that happens, CSF builds up and causes a problem called hydrocephalus.

What Is Hydrocephalus?

Hydrocephalus is when extra fluid builds up in the brain because it can't drain properly. This causes the ventricles (fluid spaces) in the brain to get bigger, which can put pressure on the brain.

Sometimes this causes symptoms like:

- Headaches
- Vomiting
- Trouble thinking or walking

Other times, people with extra CSF don't feel sick. Doctors use brain scans like CT or MRI to see how big the ventricles are.

What Is a Shunt?

A shunt is a small device that helps drain extra fluid from the brain. It has three parts:

1. A short tube placed into the ventricle in the brain
2. A valve that controls how much fluid drains
3. A long tube that moves the fluid to another part of the body, like the belly or heart, where the fluid is safely absorbed

Shunts are placed under the skin and are not visible on the outside.

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Types of Shunts

- VP (ventriculo-peritoneal) shunt – drains fluid into the belly (most common)
- VA (ventriculo-atrial) shunt – drains fluid into a vein
- VPL (ventriculo-pleural) shunt – drains fluid into the chest

The valve in the shunt opens only when the pressure in the head is too high. Some valves can be adjusted by a doctor using a magnet.

How Common Are Shunts in Spina Bifida?

About 60–80% of people with Spina Bifida need a shunt, usually within the first few weeks of life. If a baby doesn't need a shunt by 5 months old, they probably won't ever need one.

Shunt Problems: What to Watch For

Shunts can stop working (called malfunction) or get infected. These are serious problems.

Signs of shunt malfunction:

- Headaches
- Nausea or vomiting
- Seizures
- Trouble thinking, walking, or worsening arm or leg strength or use
- Back pain
- Speech or swallowing problems
- Changes in personality or school performance

In babies, signs may also include:

- Fast head growth
- Bulging soft spot (fontanelle)
- Vomiting
- Trouble feeding or swallowing
- Breathing pauses
- Irritability or unusual crying
- Eyes that cross or don't move normally

Even if a brain scan looks okay, there can still be a shunt problem. Always pay attention to changes in behavior or health.

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What Happens If a Shunt Malfunctions?

Most people with shunts will need at least one shunt revision (a surgery to fix or replace the shunt). In fact:

- 30–40 percent of shunts stop working in the first year
- By five years, 50–60 percent will need to be fixed
- By 10 years, up to 85 percent may need a revision

Shunt Infections

Five – 10 percent of shunt surgeries lead to infection, especially in babies. Most infections happen within 6 months of surgery.

Signs of shunt infection:

- Fever
- Neck stiffness
- Redness, swelling, or pain along the shunt
- Pus or fluid leaking from the shunt
- Belly pain

Doctors test for infection by taking a small sample of CSF from the shunt. Treatment usually includes antibiotics and surgery to remove and replace the shunt.

Treating Shunt Infections

Doctors may:

- Remove the old shunt and use a temporary drain while giving antibiotics, then place a new shunt
- Or, if the shunt is working, keep the shunt in while treating the infection, and then replace it with a new one at the end

Most infections can be cured, but they need quick and careful treatment.

Making Decisions About Shunt Care

If your child has a shunt and you think something feels wrong—especially if it seems like a past shunt problem - tell your doctor about these changes, even if they don't seem related to the shunt at first.

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Always check the shunt first before treating other issues like Chiari malformation or spinal cord tethering. Some symptoms can look the same.

Summary for Families

- CSF is a fluid made by the brain to protect it
- Hydrocephalus happens when the fluid builds up
- A shunt helps drain the extra fluid
- Most people with Spina Bifida who need a shunt will need it for life
- Shunts can stop working or get infected, and it's important to know the signs
- Watch for changes in your child and report them to a doctor
- There are different types of shunts and valves, and doctors choose what's best for each person
- Parents and caregivers play a key role in spotting problems early

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This information does not constitute medical advice for any individual. As specific cases may vary from the general information presented here, SBA advises readers to consult a qualified medical or other professional on an individual basis.