Hydrocephalus

What Is Hydrocephalus?

Hydrocephalus (sometimes called “water on the brain”) occurs when too much cerebrospinal fluid (CSF) builds up in the spaces in the brain called ventricles. This buildup causes the head to enlarge and can increase pressure inside the head and on the brain. Without treatment, hydrocephalus can cause damage to the brain or become life-threatening.

There are two types of hydrocephalus:

- **Congenital hydrocephalus** develops before birth. Roughly two of every 1,000 infants are born with hydrocephalus.
- **Acquired hydrocephalus** develops after birth.

What Causes Hydrocephalus?

Inside the brain, cavities called ventricles produce CSF. The fluid circulates around the brain and spinal cord, nourishing and protecting the brain.

Normally, CSF drains from the brain into the spinal column where the body absorbs the fluid into the bloodstream. Hydrocephalus occurs when CSF doesn’t drain into the spinal column. Instead, it builds up in the brain and causes pressure.

Fluid buildup happens for one of three main reasons:

- **Blockage**: The most common cause of excess fluid in the brain is a partial blockage. The block can occur between different ventricles, or between other areas of the brain and the ventricles.
- **Poor absorption**: A less common cause of excess fluid in the brain happens when the body doesn’t absorb the fluid properly—often related to diseases or injuries that cause inflammation.
- **Overproduction.** In these cases, the body produces more CSF than it can absorb.

**Congenital Hydrocephalus**

Genetics can cause congenital hydrocephalus (hydrocephalus that is present at birth).

Congenital hydrocephalus can occur along with other conditions, such as:

- **Spina bifida.**
- Dandy-Walker complex.
- Aqueductal stenosis.
- Other cerebral and spinal malformations.

Fetal hydrocephalus might also develop when a blockage causes fluid to build up before birth.

**Acquired Hydrocephalus**

Acquired hydrocephalus can develop as the result of:

- A brain hemorrhage.
- A traumatic **brain injury**.
- Tumors.
- Cysts.
- Infections, such as meningitis.

Premature babies are at greater risk for brain hemorrhages, which can lead to acquired hydrocephalus.

**Hydrocephalus Symptoms and Effects**

**Symptoms in Infants**

In infants, the most obvious sign of hydrocephalus is an enlarged head. A baby’s soft spot (also known as a fontanel) might bulge or be tense. The skin on the head might appear thin, and the veins might look large and full. Feeling your infant’s head might reveal that the bones of the skull are separated.

Other symptoms of hydrocephalus can include:
• Downward-cast eyes.
• Problems feeding or nursing.
• Irritability.
• Sleepiness.
• Vomiting.

Symptoms in Older Children

Older children won’t have an enlarged head as the result of hydrocephalus, because the bones of the skull have already closed and hardened. Instead, your child might show symptoms of high pressure inside the head.

The most common signs of pressure include:

• Blurred or double vision.
• Delayed development.
• Headache.
• Nausea.
• Poor coordination or balance.
• Vomiting.

Other concerning symptoms might include:

• Changes in sleeping patterns.
• Declining school performance.
• Inability to concentrate or remember things.
• Irritability and personality changes.

Some signs of hydrocephalus are obvious right away, while others develop over time.

Hydrocephalus Diagnosis and Treatment

Specialists can often diagnose congenital hydrocephalus using ultrasound. At Gillette Children’s Specialty Healthcare we also meet with you, share information about hydrocephalus, and help plan a course of treatment.

In other cases, hydrocephalus gets diagnosed at, or shortly after, birth. Less frequently, health care providers diagnose hydrocephalus in older children, teens and adults.

To diagnose hydrocephalus, doctors observe symptoms and use imaging technology such as:
• **CT scan.**
• **MRI.**
• **Ultrasound.**

There’s no known way to prevent or cure hydrocephalus. Early treatment is necessary to avoid life-threatening complications.

If your child needs surgery, Gillette neurosurgeons might recommend these options to treat hydrocephalus:

• Endoscopic third ventriculostomy.
• **Shunt surgery.**

**Integrated Care**

Hydrocephalus requires lifelong management and care. If your child has hydrocephalus you might start treatment while they’re an infant. As your child grows, we continue to offer age-appropriate care through [Gillette Lifetime Specialty Healthcare](#) for teens (16 and older) and adults.

Often, hydrocephalus is tied to other conditions, such as spina bifida, cerebral palsy or traumatic brain injuries. Whether your child has one or multiple complex conditions, our multidisciplinary team offers care in a supportive, family-centered environment.

At Gillette, you’ll work with internationally recognized experts in pediatric **neurology** and **neurosurgery**. We’re here to support your family, answer questions, and help your child feel their best every step of the way.

Your child’s hydrocephalus treatment team might include experts in:

• **Child life.**
• **Medical genetics and genetic counseling.**
• **Neuropsychology.**
• Nursing.
• **Psychology.**
• **Rehabilitation medicine.**
• **Rehabilitation therapies.**
• **Social work.**

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