

# Ventriculoatrial (VA) shunt

## Hydrocephalus

### Cerebrospinal fluid

Cerebrospinal fluid (CSF) is a clear, watery fluid that the body is always making in the spaces of the brain called the ventricles.

- CSF flows out of the ventricles and circulates around the brain and spinal cord.
- The blood vessels of the brain reabsorb CSF into the bloodstream.

### Functions of CSF

- CSF acts as a cushion to protect the brain and spinal cord from injury.
- CSF delivers nutrients to the brain.
- CSF removes waste products from the brain tissues.

### Hydrocephalus

If CSF cannot flow normally, fluid builds up inside the ventricles. This causes the ventricles to enlarge and increases the pressure inside the brain. We call this hydrocephalus. There are 2 types of hydrocephalus.

### Obstructive hydrocephalus

Something is blocking the usual flow of CSF.

### Absorptive hydrocephalus

The brain cannot re-absorb the CSF that it is making.

Without treatment, the ventricles will get too large. This puts pressure on the delicate brain tissue. Pressure can damage brain tissue and cause serious health problems, including death.

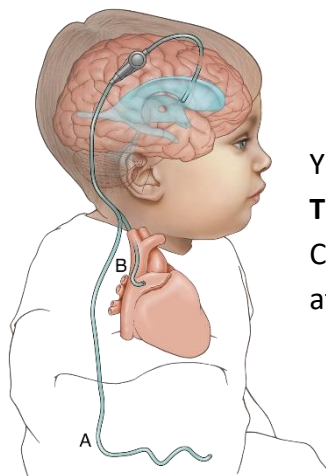
### Ventriculoatrial shunt

Ventriculo: Ventricles in the brain.

Atrial: The upper chamber in the heart. The right atrium receives blood from the veins.

### VA shunt placement

The VA shunt is a medical device. It uses a tube to relieve pressure on the brain caused by the buildup of CSF. We place the tip of the catheter inside the brain ventricle. The tubing then goes under the skin, down the neck, and into the right atrium.



Your child will only have **Tubing B**. This tube moves CSF down into the right atrium of heart.

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### Top end of VA shunt tube in ventricle

## Goal of surgery

To keep the CSF volume in the ventricles balanced. The amount of CSF flowing out of the ventricles will be equal to the amount of CSF made in the ventricles.

## VA shunt surgery

We carefully guide the top or “proximal” end of the shunt tip into the ventricle and connect the tubing to a pressure valve.

- The pressure valve controls the flow of CSF by acting like an on-off switch. It opens to release CSF when the pressure builds up and then closes.
- Excess CSF drains through the bottom or “distal” end of the shunt tubing and moves into the right atrium. It mixes with the incoming blood and is absorbed.

## VA shunt device

We place the shunt tubing under the skin behind the ear, down the neck, and into the right atrium.

- You may be able to see the outline of the tubing in the neck of a thin child.
- The pressure valve is behind the left or right ear and is usually easy to feel.
- As your child grows taller, the tubing in the atrium may start to move up. If this happens, we may need to replace the shunt.

## Post-operative care after a VA shunt

We will closely monitor your child.

### Incision and dressing

There will be a small incision on your child’s head and chest. We may cover this incision with a gauze dressing. Keep the dressing clean and dry.

### Pain medicine

Your child may have some discomfort for the first few days after surgery. The neurosurgery team will order pain medicine as needed.

### Activity

Your child can return to normal activity when the team tells you it is okay. This is usually at your 1 month follow-up appointment.



Do not let child exercise, play sports, or rough play until your team approves.

### Shower or bath

You may shower or wash over incision sites 48 hours after surgery.

- You may wash your child’s hair with soap and water 48 hours after surgery.
- Do not let incisions get under water until your doctor approves.

### Follow-up appointments

We will schedule all follow-up appointments before you go home.

## Shunt malfunction



A shunt is like any other medical device. Problems and complications with a VA shunt can occur. The most common problem is a shunt malfunction.

Warning signs of a shunt malfunction can appear quickly. Call your provider or nurse if you see the following:

Infants:

- Full, tense fontanel or head enlargement
- Bulging scalp veins
- Swelling or redness along shunt tract
- Unusual vomiting, fussiness or sleepiness
- Less interest in eating
- Downward looking of the eyes

Older children:

- Headaches, vomiting, fussiness, tiredness
- Swelling or redness along the shunt tract
- Loss of previous abilities
- Constant downward looking of the eyes

## Shunt infection

The VA shunt is a foreign body. Any implanted foreign body is at risk for infection. Call your provider or nurse if you see the following:

- Redness around the area of the incision
- Yellow discharge from the incision

- Temperature higher than 102° F (degrees Fahrenheit) or 38.8° C (degrees Celsius)
- Fever lasting longer than 48 to 72 hours after surgery.

## Neurosciences

For locations and contacts visit:

<https://www.cookchildrens.org/services/neurosciences/>

or



These instructions are only general guidelines. Your healthcare provider may give you special instructions. If you have questions or concerns, please call your healthcare provider.