

# Ventricular access device (VAD)

## 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.

### Ventricular access device

Ventricular: Ventricles in the brain.

Access device: Small reservoir placed under the baby's scalp. It is connected to a tube placed inside the ventricle.

### Goal of surgery

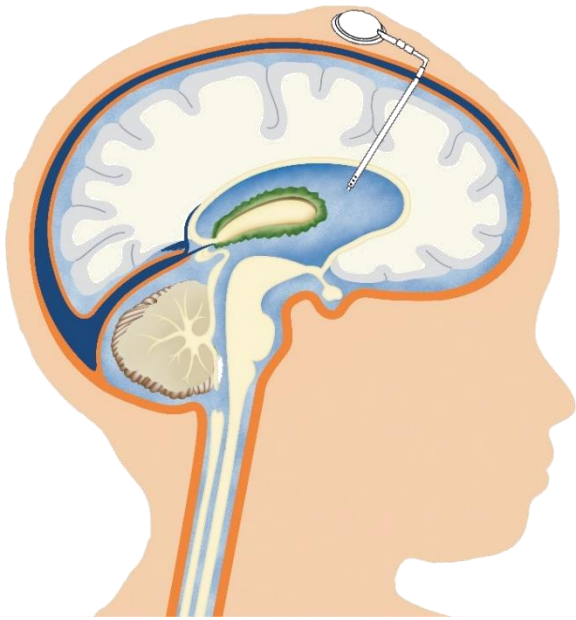
To keep the CSF volume in the ventricles balanced. The amount of CSF flowing out of the ventricles will be equal to the amount of CSF made in the ventricles.

### VAD and your premature baby

Premature babies:

- May not weigh enough to place a permanent shunting device.
- May be at a higher risk for developing an infection following surgery.

The VAD is a temporary device. We use the VAD to remove excess CSF until your baby grows and gains weight.



## VAD placed in ventricle of the brain

### VAD and NICU nurses

NICU nurses are specially trained to remove excess CSF from the VAD. Your neurosurgery team will decide how much CSF the nurses need to remove and how often. Nurses use sterile technique. They will:

- Clean the VAD site.
- Place a needle into the VAD reservoir.
- Slowly withdraw excess CSF.

### Post-operative care in NICU

We closely check your baby after surgery.

#### Incision and dressing

There will be a small incision on your baby's head. We may cover this incision with a gauze dressing. We will check the incision frequently for any leaking or signs of infection.

#### Swelling

There may be some swelling around the incision. Sometimes a small amount of fluid will collect around the VAD reservoir.

#### Pain medicine

Your baby may be fussy and have a small amount of discomfort for the first few days after surgery. Most babies do very well and only need a mild pain medicine such as acetaminophen (Tylenol®).

#### Shower or bath

48 hours after surgery, you may gently wash over the incision site.

- You may wash your baby's hair with soap and water or a gentle shampoo.
- Do not let incisions get under water until your doctor approves.

#### Head ultrasounds

Your baby may need several head ultrasounds. This helps us monitor the amount of fluid in the ventricles.

### Your stay in NICU

Your baby will stay in NICU while the VAD is in place. Your neurosurgery team will:

- Continue to check on your baby's progress and weight gain.
- Closely monitor the amount of CSF in the ventricle.
- Check for any signs of increasing hydrocephalus.
- Decide when we can safely remove the VAD.
- Decide if your baby will need a permanent shunting device and when.

## VAD shunt infection

The VAD shunt is a foreign body. Any implanted foreign body is at risk for infection. Your health care team will watch for any signs of infection. This may include:

- 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.