External Ventricular Drain (EVD)

What is an external ventricular drain (EVD)?

An external ventricular [ven-TRICK-you-lure] drain, or EVD, is a small, soft tube that drains cerebrospinal [seh-ree-bro-SPY-null] fluid (CSF) from the brain into a collection bag outside the body.

Why does my child need an EVD?

An EVD reduces pressure on the brain due to:

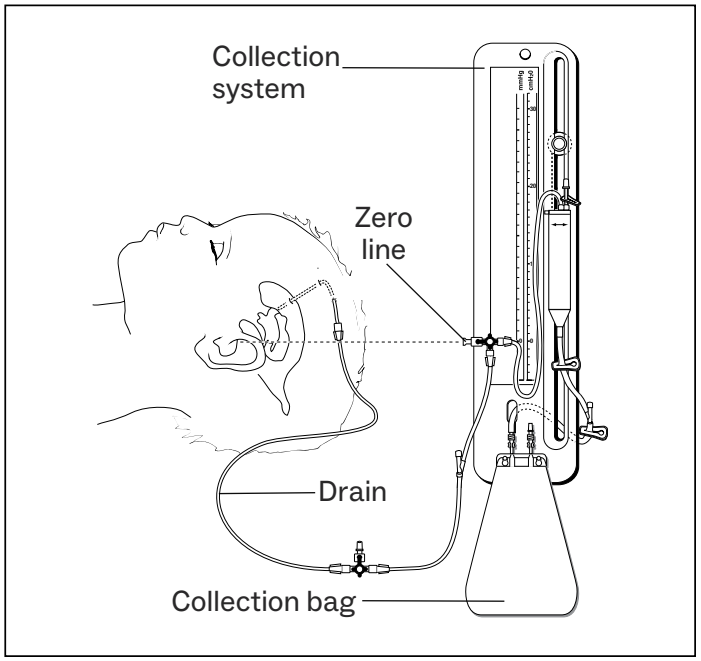
- Brain tumor
- Brain abscess (infection that causes pus to build up)
- Hydrocephalus [hi-dro-SEFF-uh-lus], or fluid build-up in the brain
- Head injury
- Brain infection because of a shunt (permanent internal drain)

How does the EVD work?

The EVD tube connects to a collection system that lets the CSF drain into a bag hanging on a pole. The surgeon orders the pressure levels to keep the brain fluid pressure correct. Your child's nurse adjusts the EVD zero line so it's level with your child's ear. They'll put the slide chamber at the level the surgeon ordered to keep normal brain fluid pressure.

How is an EVD inserted?

A surgeon inserts the EVD during surgery. Once your child receives medicine to help them sleep, a healthcare provider will shave a small area of their head. The surgeon makes an opening in the shaved skin and then makes a small opening in the skull to insert the tube into a ventricle (fluid-filled area). They then stitch the tube under the skin.



What will happen after the surgery?

After surgery, your child must:

- Have a cardiac and pulse oximetry monitor to watch their heart rate and blood oxygen levels
- Drink enough fluid to replace the amount that leaves their body or have fluids through an IV (tiny tube inserted into a vein)
- Try not to move much

Your child's nurse will:

- Watch your child closely and see how alert they are
- Record the fluid that collects in the slide chamber and empty it every 2 hours into the bag
- Clean the skin around the surgery site every day

The collection system must stay at the right height so the right amount of fluid drains. Never move your child's head or change height without a nurse's help.

What can I expect after EVD surgery?

After your child receives an EVD, they may be angry, scared, confused, or think the EVD is ugly. Tell your child why they need the EVD, but try to be supportive and sensitive to their fears and self-image.

How does the doctor remove the EVD?

If your child improves, the nurse practitioner or neurosurgery resident will remove the stitches and gently pull the EVD tube out. They may apply numbing medicine to the skin around the EVD or give your child medicine to lightly sedate them.

If your child needs a shunt (a tube that drains CSF from the brain to the belly), the doctor will remove the EVD in the operating room before inserting the shunt.

When should I call for my child's nurse?

Call for the nurse if your child:

- Needs to change positions (sit up or lie down)
- Needs to use the bathroom or wants to go for a walk
- Feels sick or vomits
- Cries more or is fussier than usual

Immediately call for help if the drain or collection system comes apart in any way.

Talking with your child's doctor about EVDs

The table below lists the potential benefits, risks, and alternatives for external ventricular drains. Talk to your child's doctor about this surgery, and ask questions before scheduling the procedure.

Possible benefits	Risks and possible complications	Alternatives
An EVD allows healthcare providers to drain cerebrospinal fluid (CSF) from your child's brain and relieve pressure.	Risks and possible problems with any surgery include: • Problems with general anesthesia, like vomiting, sore throat, headache, cut lips, trouble urinating, heart problems, stroke, or pneumonia • Infection, blood clots, or bleeding that requires a blood transfusion • Death (extremely rare) Risks of EVD surgery include: • Headaches (can be treated with Tylenol or stronger medicine for severe headaches) • Vomiting	The main alternative to an EVD is a shunt. This is a catheter with one end inserted in a brain ventricle. The other end is inserted in the abdomen where the cerebrospinal fluid drains and is absorbed by the body.