About Your Programmable VP Shunt for Pediatric Patients

This information will help you learn about your programmable ventriculoperitoneal (VP) shunt. In this resource, the words “you” and “your” refer to you or your child.

A VP shunt is used to drain extra cerebrospinal fluid (CSF) from your brain. CSF is a liquid that’s made in the ventricles (hollow spaces) in your brain. Your CSF protects your brain and spinal cord by acting like a cushion. It also brings nutrients throughout your brain and carries waste away. You’re making new CSF all the time.

Normally, CSF flows from your ventricles, around your brain and spinal cord, and into your bloodstream. Hydrocephalus (HY-droh-SEH-fuh-lus) happens when CSF builds up in your ventricles. This makes your ventricles bigger and puts pressure on your brain (see Figure 1).
Hydrocephalus can happen if the flow of CSF is blocked or if not enough CSF is absorbed into your bloodstream.

**About Your VP Shunt**

A VP shunt is a device that’s placed in your body during a surgery. The shunt takes the CSF out of your brain and moves it into your abdomen (belly), where it’s absorbed by your body. This lowers the pressure and swelling in your brain.

A VP shunt has 3 parts (see Figure 2):

- A one-way valve and reservoir that controls the flow of CSF.
- A short catheter (thin, flexible tube) that drains the CSF from your brain. It’s attached to the valve and can be placed in the front, back, or side of your head.
• A long catheter that moves the CSF into your abdomen. It’s attached to the valve and tunneled under your skin, behind your ear, down your neck, and into your abdomen.

For more information about the surgery to place your VP shunt, read the resource About Your Ventriculoperitoneal (VP) Shunt Surgery for Pediatric Patients (www.mskcc.org/pe/vp_shunt_surgery_peds).

As the VP shunt drains extra CSF and lowers the pressure in your brain, it may relieve your symptoms. Some symptoms will go away right after your surgery. Others will go away more slowly, sometimes over a few weeks.

Your programmable VP shunt can also be used to put some medications into your ventricles.

**About your programmable VP shunt settings**

The amount of CSF your VP shunt drains depends on its pressure setting. With a programmable VP shunt, your
neurosurgeon can adjust the shunt’s pressure settings, even after it has been placed. In general, a higher pressure setting means less CSF is being drained. A lower pressure setting means more CSF is being drained. The settings are different for each manufacturer.

Write down the type of programmable VP shunt you have and the pressure setting below.

- Type of programmable VP shunt:
  __________________________

- Pressure setting:
  __________________________

Your nurse will give you a wallet card that states you have hydrocephalus and a programmable VP shunt. Write the type of programmable VP shunt you have and your shunt’s pressure setting on the card. Carry the card with you at all times. If you need emergency medical care, show it to the medical workers.
Precautions While You Have a Programmable VP Shunt

Magnets
The pressure setting of some programmable VP shunts may accidentally change if you come too close to a magnet. This depends on the model of your shunt.

Ask your neurosurgeon if you need to take precautions when you’re near magnets. Be sure to follow the manufacturer’s guidelines for magnetic field precautions specific for your type of shunt.

Here are some general rules for many shunts:

- Keep all products with magnets at least 2 inches (5 centimeters) away from the valve implant site.
- Don’t use magnetic therapy pads and pillows.
- Don’t use the iPad 2 if you have a Medtronic Strata® programmable VP shunt.
- Don’t use audio headsets without checking the shunt manufacturer’s guidelines.

Magnetic resonance imaging (MRI) and other imaging scans
If you’re having an MRI scan, tell the MRI technologist you have a programmable VP shunt before you have the
scan. They will need to know your shunt’s model and setting. Show them the wallet card your nurse gave you.

Depending on the model of your programmable VP shunt, the magnet in the MRI scanner may change your shunt’s pressure setting. **After your MRI, your shunt’s pressure setting will need to be checked, reprogrammed, or both.** You may need to have x-rays to help see if the pressure setting has changed.

Before your MRI scan, make arrangements to have your shunt reprogrammed after your MRI scan. Your shunt should be reprogrammed within 4 hours after your MRI.

Some types of programmable VP shunts aren’t affected by MRI scans. Ask your neurosurgeon or nurse practitioner (NP) if your shunt will need to be reprogrammed after MRI scan.
You don’t need to take any precautions if you’re having a computed tomography (CT) scan or x-ray.

**MedicAlert® jewelry**
You should always wear a MedicAlert bracelet or necklace that says you have hydrocephalus and a programmable VP shunt. If you’re ever seriously ill or hurt and need medical help, it will tell emergency services workers about your programmable VP shunt. You can buy a MedicAlert bracelet or necklace at most drug stores. For more information, visit [www.medicalert.org](http://www.medicalert.org).

**Abdominal surgery**
If you ever need to have abdominal surgery, tell the doctor doing the surgery and your neurosurgeon so precautions can be taken.

Tell your neurosurgeon if you have peritonitis or diverticulitis requiring emergency surgery or antibiotic treatment.

**Physical activities**
Don’t participate in any contact sports (such as football, boxing, and wrestling). You can participate in noncontact sports (such as swimming and running).
Wear a helmet to lower your risk of head injury, if needed. Ask your neurosurgeon for specific guidelines on wearing a helmet.

**When to Call Your Healthcare Provider**

Call your healthcare provider if:

- You have warning signs that your programmable VP shunt isn’t working properly. These signs include:
  - Increased head size and bulging soft spot in infants
  - A headache that doesn’t get better after resting or taking medication
  - Vomiting (throwing up) with little or no nausea (feeling like you’re going to throw up)
  - Fatigue (feeling unusually tired or weak)
  - Irritability (becoming easily frustrated or annoyed)
  - Personality changes (not acting like your normal self)
  - Problems with thinking and memory (such as confusion)
  - Trouble with balance or walking
  - Trouble waking up or staying awake
  - Weak bladder control
○ Seizures
○ High pitched cry in infants
○ Trouble eating
○ Problems seeing, such as:
  ■ Blurred vision
  ■ Double vision
  ■ Vision loss
  ■ Eyes that turn downward (also called sunsetting)

• You have warning signs of a VP shunt infection. These signs include:
  ○ A fever of 100.4 °F (38 °C) or higher
  ○ Swelling, redness, or both along the shunt path
  ○ Pain around the shunt or around the shunt tubing from the head to the abdomen

These warning signs can appear quickly. **If your child has any of these signs or symptoms, call their healthcare provider right away.**

**If you can’t wake your child, call 911 or go to the nearest emergency room right away.**
If you have any questions, contact a member of your care team directly. If you're a patient at MSK and you need to reach a provider after 5 p.m., during the weekend, or on a holiday, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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