

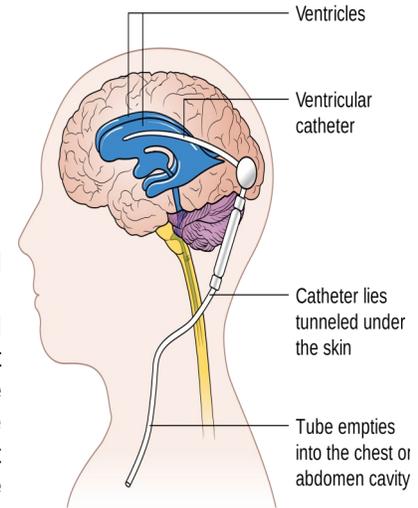
Factsheet: Shunt



What is it?

A shunt is an implanted device used to drain extra cerebral spinal fluid (CSF) that circulates around the brain and spine. It is most often used to treat a condition known as hydrocephalus; or this buildup of CSF. Without a release of such excess fluid, pressure in the brain will increase and cause damage. Congenital hydrocephalus exists at birth while acquired hydrocephalus is the result of an issue after birth like hemorrhage, prematurity, infections, cysts and trauma.

A proximal, pressure responding catheter is implanted in the lateral ventricle. From here, a distal tubing can be palpated usually behind the child's ear, down along the neck, before it reaches its distal location. Shunts are named for the specific organs involved. Most often, shunts are placed in the lateral brain ventricle and drain to the abdomen; known as the ventriculoperitoneal (VP) shunt. Drainage into the chest is known as a ventriculopleural shunt and into the heart as a ventriculoatrial shunt. At this distal location, the CSF will be absorbed by the body. Shunts can be programmable, meaning the healthcare provider can adjust how much fluid is drained by the shunt.



Are there complications?

Shunt complications include obstruction and infection and can occur on either the ventricular or distal catheter. A shunt can also become obstructed by blood cells or tissue, causing a blockage of flow. On the contrary, a shunt can also drain too quickly. Over-drainage can cause the ventricles to collapse, tearing blood vessels and causing headache or further complications. As a foreign object within the body, a shunt can cause infection. A VP shunt is most at risk for an infection secondary to an abdominal infection. However, VP shunt complications are often less severe. Failure can also result from broken or disconnected equipment.

A child needs to be referred to their doctor if a shunt malfunction is suspected. Shunt complications can be serious and life threatening but with early intervention, treatment is often very successful. Students should also carry a wallet card to communicate pump settings and precautions.

Signs and symptoms of malfunction

- Personality changes
- Headache
- Nausea
- Changes in vision
- Slurred speech
- Worsening gait and balance
- Poor coordination
- Deterioration in school performance
- Decrease in sensory or motor function
- Swelling along the shunt tract
- Irritability
- Vomiting
- Seizures
- Lethargy

Signs and symptoms of infection

- Fever
- Chills
- Neck stiffness and tenderness
- Redness at incision
- Drainage at incision
- Pain

Precautions to consider

According to *Memorial Sloan Kettering Cancer Center (2015)*:

- Keep all products with magnets at least 2 inches away from the valve implant site
- Do not use magnetic therapy pads and pillows
- Do not use the iPad 2 if you have a Medtronic Strata® programmable VP shunt
- Do not use audio headsets without checking the shunt manufacturer's guidelines
- MRI precautions

Suggested school accommodations

Even once a shunt has been placed, the pressure on the brain can cause short and long term effects as a lifelong condition. Often these children experience some degree of learning difficulty including issues with abstract concepts, retrieving stored information and spatial/perception disorders. They can also have poor motor coordination making them appear clumsy as well as poor fine motor skills that can affect handwriting, using scissors, etc.

- PT/OT/Speech consult to identify needs
- Monitor visual impairment
- Use of assistive technology
- Offer clear, concision direction
- Break down complex tasks
- Provide clear schedules
- Allow time for response
- Use discussion rather than lecture

SHNIC school nurses information:

Specific health issues for individual health care plans

- Diagnosis including type and location of shunt, known settings
- Date of last appointment to have shunt checked, how frequent are checks
- Child specific signs and symptoms of increased intracranial pressure
- Emergency healthcare plan for shunt malfunction
- Safety restrictions like magnets to consider
- Physical activity and positioning restrictions
- Orders for orthotics or braces
- Orders for bowel and bladder program, if applicable

Helpful hidden device information for school nurse

Type of device: _____
Serial #: _____
Model #: _____
Implant date: _____
<i>For school health professional working with student</i>
Experience with device: <input type="checkbox"/> Y <input type="checkbox"/> N
Device manual at school: <input type="checkbox"/> Y <input type="checkbox"/> N
DME contact information: <input type="checkbox"/> Y <input type="checkbox"/> N
<i>Device specific</i>
Alarms: <input type="checkbox"/> Y <input type="checkbox"/> N
Battery: <input type="checkbox"/> Y <input type="checkbox"/> N
Back up equipment at school: <input type="checkbox"/> Y <input type="checkbox"/> N
<i>Precautions to consider at school</i>
Positioning of student: <input type="checkbox"/> Y <input type="checkbox"/> N
Emergency plan in place: <input type="checkbox"/> Y <input type="checkbox"/> N
Physical activity restriction: <input type="checkbox"/> Y <input type="checkbox"/> N
Magnet sensitivity: <input type="checkbox"/> Y <input type="checkbox"/> N
Emergency outlet: <input type="checkbox"/> Y <input type="checkbox"/> N

Resources & Manuals

Patient guide to pediatric VP shunt

<https://www.mskcc.org/pdf/cancer-care/patient-education/patient-guide-pediatric-ventriculoperitoneal-vp-shunt-surgery>

Memorial Sloan Kettering Cancer Center

<https://www.mskcc.org/cancer-care/patient-education/about-your-programmable-vp-shunt-pediatric-patients>

Hydrocephalus Association

[Hydroassoc.org](http://hydroassoc.org)

A Teacher's Guide to Hydrocephalus

http://www.hydroassoc.org/docs/A_Teachers_Guide_to_Hydrocephalus.pdf