



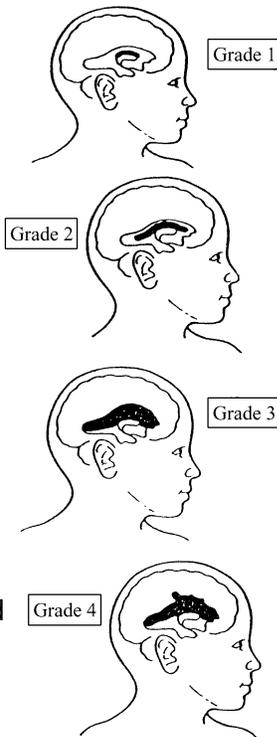
Intraventricular Hemorrhage (IVH) in Newborn Babies

What is Intraventricular Hemorrhage (IVH)?

IVH means bleeding into or around the ventricles within the brain. The ventricles are spaces in the brain filled with a fluid called cerebral spinal fluid or CSF. This fluid flows around and inside the brain to cushion it.

The extent of IVH is graded:

- Grade 1 - bleeding in the tiny area where it first begins.
- Grade 2 - bleeding within the ventricles.
- Grade 3 - larger amount of bleeding with the ventricles getting bigger.
- PHVD - (sometimes called Grade 4) bleeding into the brain tissue.



How will the Medical Team know if my baby has IVH?

Most of the time there are no outward signs that the bleeding has occurred. Rarely, babies may have seizures or sudden anemia. Anemia is having too few red blood cells – the cells that carry oxygen to the body.

All babies at risk for IVH have a test called an ultrasound of the head at around 7 days of age. This test is painless. It uses sound waves to give a picture of the baby's brain.

If IVH is present, the baby may have this test done again at regular times to see if the bleeding or the size of the ventricles is changing. It usually takes a few days to get the results of the test.

Can IVH cause brain damage?

- Grades 1 and 2 IVH are the most common. They usually do not cause any brain damage that can be seen. The blood is slowly absorbed by the body.
- Babies with Grade 3 IVH are at increased risk of brain damage, but most are normal or near normal.
- Babies who have needed treatment for hydrocephalus and those with Periventricular Hemorrhagic Infarction (PHVD) are at highest risk for permanent brain damage. You may also hear people refer to PHVD as Grade 4 IVH but that is an older term.

Why do preterm babies get IVH?

The brain is still developing in preterm babies. The area where IVH usually begins has a very fragile network of tiny blood vessels. These burst easily causing the bleeding.

The more premature and the sicker the baby is, the greater the risk that they will develop IVH. Babies at highest risk are those weighing less than 1000 grams.



How is IVH treated?

There is no specific treatment for IVH. Surgery will not prevent or cure the bleeding. Improved care and monitoring of preterm babies have decreased the rate of IVH, but some babies still get it.

What are the complications of IVH?

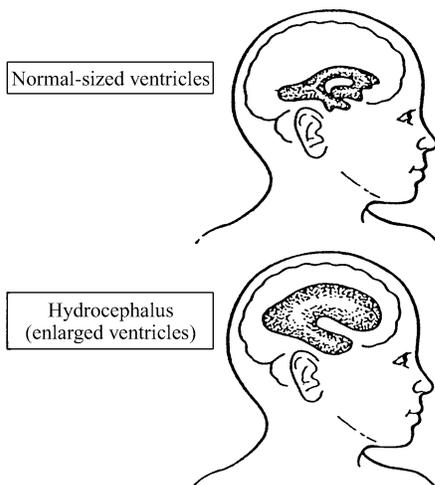
Complications are most common with Grade 3 and PHVD. The most frequent problem is hydrocephalus. With this problem, too much fluid (CSF) collects in the ventricles. This extra fluid may cause:

- the baby's head to grow faster and larger than normal.
- pressure on the baby's brain.

Why does a baby develop hydrocephalus?

Hydrocephalus occurs when fluid that flows around the brain (CSF):

- cannot get out due to a blood clot blocking a channel, or
- is not absorbed because of scarring from the bleeding.

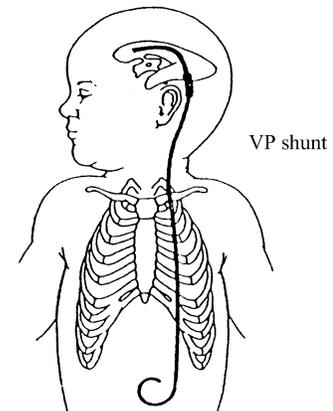


Can hydrocephalus be treated?

If your baby gets hydrocephalus, they need some way for the fluid to escape from inside the brain.

This may sometimes include:

- spinal taps every few days to remove excess fluid while awaiting a decision on a surgical treatment for hydrocephalus.
- placement of a chamber that collects the fluid under or outside the scalp. When the pressure builds up, fluid can be withdrawn from the chamber by a needle. Most often this only deals with the problem in the short term. Most babies will need to have a shunt.
 - a shunt is a tiny tube placed into one of the two larger ventricles. It connects to another longer piece of tubing under the skin behind the ear. The longer tubing tracks under the skin, down the neck and chest to the baby's abdomen. Here the fluid is absorbed. This is called a ventricular-peritoneal or VP shunt.



How will I know if my baby will have long-term problems?

This can only be assessed over time by watching your baby's development. While in hospital, a Physiotherapist or Occupational Therapist may check your baby to see if there are any early problems with their development. It is important for preterm babies, especially those with IVH, to have their development checked after discharge too.



Serious problems that may appear are:

- Motor (movement) problems, also referred to as **cerebral palsy**.
 - tight or stiff muscles.
 - slow to crawl, stand or walk.
 - abnormal crawling, toe walking.
 - moving one side more than the other.
 - frequent arching of the back (not just when angry or at play).
- Slow mental development:
 - does not listen to your voice by 3-4 months after hospital discharge.
 - does not make different sounds by 8-9 months after discharge.
 - does not seem to understand or say any words by 12-13 months after discharge.
- Seizures, also called convulsions.

Less serious problems appear more slowly. They are also harder to detect. They may not show up until preschool or grade school.

These can include:

- poor coordination or balance.
- learning disabilities (math or reading).
- very short attention span.
- behavioural problems.
- problems doing things that require coordination of the eyes and hands, such as catching a ball or copying a simple drawing.

If you are concerned about something that you think might be a problem, have it assessed by your Medical Team.

Next Review: November 2025