



When your child needs a hospital, everything matters.™

Helping Hand™

Intraventricular Hemorrhage (IVH) – Infant

IVH stands for intraventricular hemorrhage (intra ven TRICK you lar HEM or ej). In the brain of a premature infant, the blood vessels are fragile and immature. These blood vessels are in the lining of parts of the brain where cerebral spinal fluid is made. This fluid normally coats and protects the brain and spinal cord. The areas that hold the fluid are called ventricles (VEN trick uls).

Sometimes the fragile blood vessels burst and bleed into the lining around the ventricles or into the ventricles themselves. The main reason IVH happens is that the blood vessels are not protected from changes in the brain the way they would be in an older child. In the most severe cases, the blood fills up the ventricles and the nearby brain tissue can be deprived of blood flow, causing damage to brain cells.

Almost all cases of IVH's occur in the first 7 days of life. Although a diagnosis of IVH is serious, it is possible for damaged areas of the brain to regain function later in life.

The most important thing for parents to remember is that when you take your baby home, even if an IVH happened in the NICU, you will be able to work with a team of specialists in the Follow-Up Program and help your baby develop.

Problems after IVH

Sometimes there are problems after an IVH. These are some of the things that can happen after an IVH:

- Nothing
- Apnea (a pause in breathing)
- Increase in head size (circumference)
- Bradycardia (decrease in heart rate)
- Seizures
- Vision problems
- Hearing problems
- Learning problems
- Cerebral palsy (a motor disorder)
- Speech and Language Problems

Diagnosis

IVH is diagnosed by an ultrasound test (see Helping Hand HH-III-54, *Ultrasound*). This test does not hurt. Most babies handle it quite well. The images from the test show the location and size of any bleeding and the condition of the ventricles. The doctor will assign one of the following grades to the ultrasound results.

- Grade I** The smallest type of IVH. Bleeding is limited to the lining of the ventricles.
- Grade II** The blood spills into the ventricles, but there is no enlargement or swelling.
- Grade III** The ventricles have become enlarged and are full of blood.
- Grade IV** The blood in the lining of the ventricles has caused surrounding brain tissue to be damaged due to loss of blood flow.

The more severe the IVH, the more likely it is that your baby may have some of the problems listed above. Even infants with the lowest grades of IVH can sometimes have delays and problems later on. Some babies with the most severe IVH can still have very typical outcomes.

What parents can expect after diagnosis

- More ultrasound scans of the head and possibly an MRI will be done to follow up.
- Head size (circumference) may be measured daily to check for any possible increase in cerebral spinal fluid in the brain.
- Vital signs will be checked daily and other tests may be performed to follow your baby's progress.
- Your baby will be watched closely for any signs of seizures.
- Specialists in physical, occupational, speech and music therapy will help you and the nursing staff work on ways to help support your baby's development.
- If hydrocephalus occurs, the neonatologist will ask the neurosurgery team to help monitor your baby.

If you have any questions, be sure to ask your baby's doctor or nurse.