

Intraventricular Hemorrhage (IVH)

What is intraventricular hemorrhage?

Intraventricular hemorrhage (IVH) means bleeding into the normal fluid spaces (ventricles) within the brain. IVH is also used to refer to bleeding in areas near the ventricles even if the blood is not within them. The extent of IVH is graded:

- Grade I - bleeding confined to the tiny area where it first begins
- Grade II - blood is also within the ventricles
- Grade III - more extensive bleeding, usually with the ventricles increasing in size
- Grade IV – enlarged ventricles and a collection of blood within the substance of the brain.

Why do premature babies get IVH?

The brain is still developing. 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 s/he will develop IVH. The infants at highest risk are those weighing less than 1000 grams (2 1/4 lbs).

How will my doctors know if my baby has IVH?

Most of the time there are no outward signs that the bleeding has occurred; occasionally babies have seizures or sudden anemia (low blood count/low hemoglobin). Babies may also have an increase in apnea or bradycardia (pauses in breathing and slow heart rate) or may have a high-pitched cry. Babies at risk for IVH usually have an ultrasound of the head in the first few days of life. This painless test, performed in the isolette or bed, uses sound waves to give a picture of the baby's brain (this test is very similar to the ultrasound that the mother had to check the baby while the baby was still inside the mother). If IVH is present, the baby may have this test repeated at regular intervals to see if the hemorrhage or the size of the ventricles are increasing.

How is IVH treated?

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

Can IVH cause brain injury?

Grades I and II IVH are most common. The baby usually has few or no problems. The blood is slowly absorbed by the body. Babies with Grade III IVH are at an increased risk of brain injury. Babies who have needed treatment for hydrocephalus and those with grade IV IVH are at risk for permanent brain injury.

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

This can only be determined over time by monitoring his/her development. For this reason it is important for premature infants, especially those with IVH, to have their development followed carefully after discharge.

Serious abnormalities that may appear are:

- motor (movement) problems:
 - ❖ 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 age 3-4 months after hospital discharge
 - ❖ does not make different sounds by 8-9 months after discharge
 - ❖ doesn't seem to understand or say any words by 12-13 months after discharge
- seizures, also called convulsions

Less serious problems appear more slowly, are more difficult to detect, and may not be obvious until preschool or grade school. These can include:

- poor coordination or balance
- specific learning disabilities (math or reading)
- very short attention span
- behavioral problems
- difficulty with activities that require coordination of the eyes and hands, for example, catching a ball or copying a simple drawing

If your baby has Grade III or IV IVH, s/he may be eligible for a developmental intervention program. Anytime in the future, if you are concerned about something that you think might be abnormal, have it checked out by your baby's regular doctor soon.