



What is hypoxic ischemic encephalopathy?

Hypoxic ischemic encephalopathy, or HIE, is a medical term that means brain injury resulting from too little blood flow or oxygen delivery to the brain. This condition is also called neonatal encephalopathy.

- **Hypoxic** [hye-POK-sik]: not enough oxygen
- **Ischemic** [is-KEM-ik]: not enough blood flow
- **Encephalopathy** [en-sef-a-lo-path-ee]: a sign of possible brain injury

What causes HIE?

There are many causes of HIE, and sometimes the exact cause cannot be found. Some possible causes are:

- Too little oxygen supplied by the placenta during labor
- A blockage in the baby's umbilical cord
- A clot in the baby's brain
- Shock or sudden blood loss
- Infection

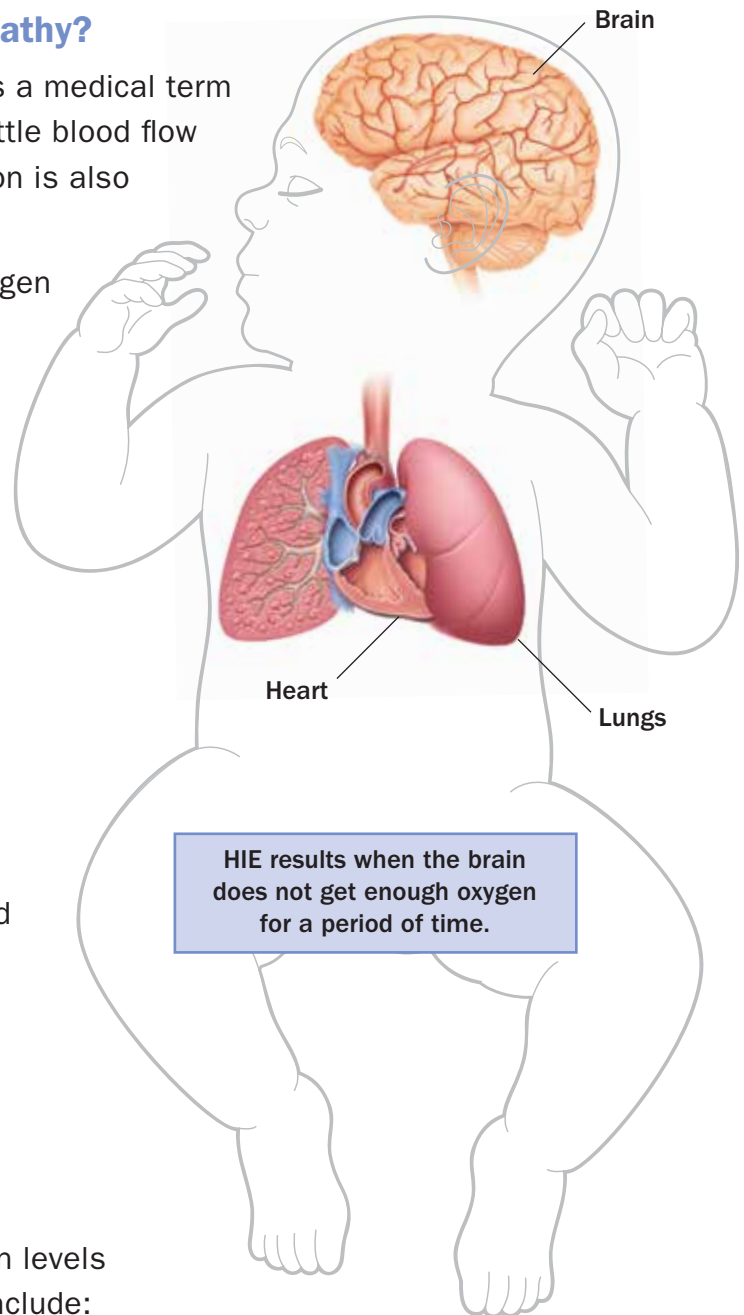
What are the symptoms of HIE?

Symptoms of HIE depend on how low oxygen levels dropped and for how long. Symptoms can include:

- Pale skin
- Weak muscles ("floppy")
- Weak or absent breathing
- Seizures
- Lethargy (low energy)
- Coma
- Decrease in certain reflexes

How common is HIE?

In the US and other Western countries, HIE occurs in 1 to 3 out of every 1,000 births.



Treating Hypoxic Ischemic Encephalopathy

How is HIE diagnosed?

Doctors diagnose HIE by observing the baby's symptoms and performing a physical exam. They will also run tests to see how well the baby's brain and heart are working.

What treatment will my baby receive?

The most common treatment for HIE is **hypothermia** (cooling) of either the head or the whole body. During this treatment, doctors decrease the baby's temperature for a few days. The lower temperature is thought to help limit the amount of damage to the brain.

In addition, babies with HIE may need help breathing or may need extra fluids to maintain enough blood flow to the brain. The baby also may need medicine to control seizures.

What will happen next?

HIE is a serious and life-threatening condition. For babies who survive, the long-term effects of HIE depend on the amount of brain damage. It may take months or years before the amount of damage is known. For that reason, all babies who had HIE need to be seen by a doctor who specializes in infant and child development. Be sure to keep all follow-up appointments after you leave the hospital. If you have any questions, ask the health care team. They are there to help.

Glossary

CT (or CAT) scan – painless test that uses X-rays to create a picture of the brain

EEG (electroencephalogram) – test that measures electrical activity in the brain

EKG or ECG (electrocardiogram) – test that measures electrical activity in the heart

Encephalopathy – brain injury

Hypothermia – decreased body temperature

Hypoxic – not enough oxygen

Intravenous (IV) – through a vein

Ischemic – not enough blood flow

Mechanical ventilator – a machine that helps your baby breathe by moving air in and out of the lungs

MRI – painless test that produces an image of structures inside the brain. MRI machines do not use radiation

Ultrasound – painless test that uses sound waves to create a picture of the brain

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