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Hypoxic Ischemic Encephalopathy: Information for Parents

# What is HIE?

Hypoxic ischemic encephalopathy (HIE) refers to a brain injury resulting from too little blood flow or oxygen delivery to the brain. It affects nearly 6 in 1,000 births per year in the United States.

# What causes HIE?

There are many causes, but sometimes the exact cause can be unknown. 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, or infection.

# What are the symptoms of HIE?

Symptoms can include lethargy, weak-to-absent muscle activity, flaccid or “floppy” arms and legs, a weak or absent suck reflex, weak-to-absent breathing, seizures, and coma.

# What is the treatment for HIE?

Treatment is meant to prevent any further damage due to low oxygen levels. Infants who are older than 36 weeks gestational age may qualify for treatment. Some babies may benefit from hypothermia, which is cooling of the head or the entire body, and is done by using a cooling blanket or cooling cap. Cooling limits the amount of damage to the brain after a low-oxygen event. The hypothermia treatment usually will last 72 hours, and the infant will be cooled to a temperature of 33.5 °C, or 92.3 °F; then the baby will slowly be rewarmed to a normal temperature.

Your baby may need to be sedated with medication. He or she is monitored for pain on a regular basis, and medication is given as needed. Due to the cooling and lack of movement by your baby, skin assessments will frequently be performed by your baby’s provider. Optimal nutrition is important because of decreased blood flow to your baby’s bowels. Total parenteral nutrition therapy may be started through an intravenous (IV) line so your baby can receive the nutrients he or she cannot get through eating.

# How is HIE diagnosed?

Symptoms of HIE include

* history of an acute perinatal event
* an Apgar score of 5 or less at 10 minutes (Apgar scores are a simple way for your baby’s provider to assess your baby’s health right after being born.)
* continued need for ventilation initiated at birth and continued for at least 10 minutes
* low pH on blood in the umbilical cord
* level of alertness, ranging from being sluggish to being in a coma
* decreased or no spontaneous activity
* inappropriate posture, such as arching of back or neck; rotation of arms or legs
* weak or absent reflexes
* seizures
* constricted to nonreactive pupils
* decreased to absent breaths.

Electroencephalograms (EEG) often are performed after the infant has been rewarmed to evaluate the treatment and to look for seizures.

Not all babies with HIE will survive. Depending on the severity of the injury, some babies may have long-term problems.

Babies with moderate to severe HIE often have serious long-term problems, such as learning disorders, delayed development, or cerebral palsy. Follow up with a developmental specialist after discharge will be important to assess your baby’s progress.