



There is one established treatment that can minimize permanent brain damage from [hypoxic-ischemic encephalopathy \(HIE\)](#). However, it must be given very shortly after birth/the oxygen-depriving incident in order to be effective (ideally within six hours). This treatment is known as hypothermia therapy, but it has many other names, such as “therapeutic hypothermia,” “cooling therapy,” and “neonatal cooling.” Hypothermia therapy involves cooling the baby down to a temperature below homeostasis to allow the brain to recover from a hypoxic-ischemic injury. Typically, the target temperature is about 33.5 degrees Celsius (92.3 degrees Fahrenheit) (1). There are two ways that hypothermia therapy can be administered: using a cooling cap for “selective brain cooling” or by cooling the baby’s entire body (“whole-body cooling”). Either of these options can be effective; the choice to use one over the other is dependent on what protocols are in place and what equipment a particular NICU has (2).

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Care during hypothermia therapy

Before, during, and after hypothermia therapy, medical professionals must carefully monitor the baby’s health and provide interventions if necessary. Among other things, this may entail:

- Conducting blood gas tests and managing acidosis (excessive acid in the blood)
- Maintaining normal glucose and electrolyte levels
- Providing respiratory and cardiovascular support as needed
- Testing for and treating infections



- Maintaining sedation at an appropriate level
- EEG monitoring (for signs of seizure activity) and controlling seizures

How does hypothermia therapy work?



Hypothermia Therapy

How Does Hypothermia Therapy Work?

Babies with hypoxic-ischemic encephalopathy (HIE) undergo cooling. But what does the process look like, and how does it help stop the spread of brain damage?

THE PROCESS



Using a cooling cap or blanket, a newborn's body temperature is lowered to 33.5 degrees Celsius.



The newborn's body temperature is lowered for 72 hours.



Decreased body temperature slows the baby's metabolic rate.



Cells are able to recover, preventing the spread, severity and permanence of brain damage.



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When should my baby get hypothermia therapy?

If your baby was diagnosed with hypoxic-ischemic encephalopathy (HIE), doctors have to begin hypothermia therapy very shortly after the oxygen deprivation occurred. According to the Academic Medical Center Patient Safety Organization (AMC PSO), hypothermia therapy should ideally be commenced within six hours of birth (under certain circumstances, this may be done within 12 hours) (2).

The sooner hypothermia therapy begins, the greater the chance that the baby's potential



disabilities will be minimized. There are certain criteria that babies have to meet in order to qualify for the therapy, and these can vary slightly depending on the hospital your baby is in. According to the AMC PSO, babies that meet the following criteria should be given therapeutic hypothermia:

One or more of the following:

- An oxygen-depriving complication/birth injury occurred
- The baby's [Apgar score](#) (at 10 minutes of life) was five or lower
- The baby underwent prolonged resuscitation
- The baby experienced severe acidosis
- The baby had an abnormal umbilical or neonatal blood gas test result

Additionally, one or both of the following:

- The baby had seizures
- The baby was showing clinical signs of brain damage

The AMC PSO also describes situations in which hypothermia therapy may be considered. Please see their guidelines (2) for more information.

Failure to provide hypothermia therapy to a baby that needs it is [medical malpractice](#) (it is important to note that, in many cases, HIE itself may be caused by malpractice; see our page on [birth injuries](#) for more information).

Re-warming the baby after hypothermia therapy

Although the exact ways that hypothermia therapy protects the brain are not fully known, one of the purported benefits is that it reduces the chance of reperfusion injury. Reperfusion injury occurs when blood flow is restored too quickly to injured parts of the brain; this can worsen brain damage (3).



After therapeutic hypothermia, the baby must be rewarmed slowly in order to prevent reperfusion injury. The AMC PSO suggests that the baby's temperature should be increased by 0.2 - 0.5 degrees Celsius, until it reaches 36.5 degrees Celsius. Because there is an increased risk of seizure activity during rewarming, doctors should also consider EEG monitoring (2).

Where do babies get hypothermia therapy?

Not all hospitals will be equipped to provide therapeutic hypothermia because not all NICUs are the same. Community hospitals, for example, may not have brain cooling equipment, but they should have the ability to transfer the baby to a bigger or more specialized hospital that can provide cooling. It is a good idea to inquire about what kind of care a neonatal care unit can provide when researching hospitals.

*Research update: the window of time to provide hypothermia therapy may be longer than previously thought

Traditionally, it has been thought that hypothermia therapy must be administered within six hours of birth in order to be effective. However, recent research (4) indicates that this may not be the case. Laptook et al. (2017) set out to investigate whether hypothermia therapy given six to 24 hours after birth could benefit infants with HIE. They conducted a randomized clinical trial on 168 infants with moderate or severe HIE. Their results were inconclusive. However, Bayesian analysis indicated that hypothermia therapy may have slightly reduced the chance of death and disability. The authors call for further research on the window of time in which hypothermia therapy can be effective, stressing that if belated administration of hypothermia therapy is even slightly better than no hypothermia therapy, that knowledge would still be profoundly important. Of course, the neuroprotective effects of cooling treatment are stronger the sooner it is given, so medical professionals should still administer it as quickly as possible.

About the HIE Help Center and ABC Law Centers



The HIE Help Center is run by [ABC Law Centers](#) (Reiter & Walsh, P.C.), a medical malpractice firm exclusively handling cases involving HIE and other [birth injuries](#). Our lawyers have over 100 years of combined experience with this type of law, and have been advocating for children with HIE and related disabilities since the firm's inception in 1997.

We are passionate about helping families obtain the compensation necessary to cover their extensive medical bills, loss of wages (if one or both parents have to miss work in order to care for their child), assistive technology, and other necessities.

If you suspect your child's HIE may have been caused by medical negligence, please contact us today to learn more about pursuing a case. We provide free legal consultations, during which we will inform you of your [legal options](#) and answer any questions you have. Moreover, you would pay nothing throughout the entire legal process unless we obtain a favorable settlement.

You can contact us by calling 888-329-0122, pressing the "live chat" button, or filling out a [contact form](#).

Sources

Wu, Y. (n.d.). Clinical features, diagnosis, and treatment of neonatal encephalopathy.

Retrieved April 11, 2019, from

<https://www.uptodate.com/contents/clinical-features-diagnosis-and-treatment-of-neonatal-en-encephalopathy>

The Academia Medical Center Patient Safety Organization (AMC PSO) Neonatal Encephalopathy Task Force. (2016). Therapeutic Hypothermia in Neonates: Recommendations of the Neonatal Encephalopathy Task Force[Pamphlet].

Wintermark, P., Hansen, A., Gregas, M. C., Soul, J., Labrecque, M., Robertson, R. L., & Warfield, S. K. (2011). Brain perfusion in asphyxiated newborns treated with therapeutic hypothermia. *American Journal of Neuroradiology*, 32(11), 2023-2029.

Laptook, A. R., Shankaran, S., Tyson, J. E., Munoz, B., Bell, E. F., Goldberg, R. N., ... & Das, A.



(2017). Effect of therapeutic hypothermia initiated after 6 hours of age on death or disability among newborns with hypoxic-ischemic encephalopathy: a randomized clinical trial. *Jama*, 318(16), 1550-1560.