

# research snapshot

summarize | mobilize



## Can Biomarkers Be Counted As a Risk Factor for Cerebral Palsy After Low Oxygen Birth?

### What is this research about?

When the body has a severe injury it releases cytokines. Cytokines are proteins that help the body manage injury and infection. High levels of cytokines have been found in infants that lacked oxygen during birth. Cytokines are thought to affect the chances of neurological disorders (ND) in infants that lacked oxygen during birth. Cytokines appear to have multiple peak points after an injury. It is not clear what the later peaks of cytokines do in infants who lacked oxygen during birth. There is a chance that later cytokine peaks help to repair injury.

Therapeutic hypothermia (TH) is a procedure that can help infants who lacked oxygen during birth. What impact does TH have on cytokine levels at the time of and after injury? Understanding this impact could lead to further medical procedures that will reduce the chance of ND.

### What did the researchers do?

The levels of cytokines were compared between groups of infants who lacked oxygen during birth. One group was treated with TH and the other was not. The TH group had 32 infants. The non-TH group had 22 infants. To be included in

### What you need to know:

Therapeutic hypothermia (TH) has been found to be helpful when infants lacked oxygen during birth. It is suggested that TH may influence how cytokines help the body manage injury.

the study the infants had to meet the following criteria:

- Be born after 35 weeks of pregnancy.
- Have a birth weight of more than 2000g.
- Entered the study within 6 hours of birth.

Blood was taken from the infant within 3 hours of the injury and then every 12 hours. Blood was drawn for up to 72 hours. Levels of cytokines were tested each time blood was drawn.

### What did the researchers find?

Increased cytokine levels may serve as a risk factor for the recovery of infants who lacked oxygen during birth. There was a correlation between high cytokine levels and infants that later were diagnosed with CP or whom died. TH seemed to help:

- Shorten the time between harmful and reparative cytokine cycles.
- Lengthen the cytokine cycles that help repair injury.
- Prevent a second wave of harmful cytokines.

### How can you use this research?

Policymakers will understand the importance of knowing how risk factors and treatments interact. Thus they can encourage implementation of treatments that pair well with risk factors to improve diagnosis of health issues.

Practitioners will learn of some of the potential impact cytokines can have on the development of ND's. Better knowledge of what cytokines do at different stages of injury is needed before using these cytokines as markers of injury or recovery within their practice.

### About the Researchers

Dr. Dorothea Jenkins is an Associate Professor in the Department of Pediatrics at the Medical University of South Carolina.

[jenkd@musc.edu](mailto:jenkd@musc.edu)

### Citation

Jenkins, D.D., Rollins, L.G., Perkel, J.K., Wagner, C.L., Katikaneni, L.P., Bass, W.T., Kaufman, D.A., Horgan, M.J., Languani, S., Givelichian, L. Sankaran, K., Yager, J.Y. and Martin, R.H., 2012. Serum Cytokines in a Clinical Trial of Hypothermia for Neonatal Hypoxic-ischemic Encephalopathy. *Journal of Cerebral Blood Flow and Metabolism*, 32 (10), pp. 1888-1896.

Available online at [bit.ly/1h8rnOC](http://bit.ly/1h8rnOC)

### Keywords

Chemokines, Cytokines, Hypoxic-ischemic brain injury, Induced hypothermia

### Knowledge Translation at NeuroDevNet

This is a NeuroDevNet product. NeuroDevNet is a Network of Centres of Excellence dedicated to helping children with neurodevelopmental disorders. The Knowledge Translation Core at NeuroDevNet helps to maximize the impact of research and training in neurodevelopmental disorders. The KT Core serves NeuroDevNet researchers, students and their partners by providing services such as: knowledge brokering, support for KT events, support for KT products, KT capacity building, KT evaluation and support for KT planning.

[www.neurodevnet.ca/kt/researchsnapshots](http://www.neurodevnet.ca/kt/researchsnapshots)  
[KT@neurodevnet.ca](mailto:KT@neurodevnet.ca)

