# Hbot Is Proven in Controlled Study to Benefit Cp and Similar Brain Injuries in Children

Damian McNamara, Hyperbaric Oxygen Therapy Helps Children Who Have Chronic Brain Injury. Family Practice News, Volume 36, Issue 19, Page 49 (01 October 2006)

FORT LAUDERDALE, FLA. — Hyperbaric oxygen therapy improves cognitive and social function in children with chronic brain injury, according to a study presented at a symposium on hyperbaric oxygen therapy.

Daily living, socialization, communication, and motor skills significantly improved for 21 children treated with hyperbaric oxygen therapy (HBOT), compared with 21 brain-injured patients who received standard therapy. Researchers included a third group of 21 healthy children to control for normal growth and development, reported Dr. Charles J. Golden at the symposium sponsored by the Ocean Hyperbaric Neurologic Center.

Participants were assessed more than 1 year after onset of their brain injury. The majority had cerebral palsy. The average age was 4.5 years (range, 12 months to 18 years), said Dr. Golden, professor of psychology and director, Neuropsychology Assessment Center, Nova Southeastern University, Fort Lauderdale, Fla.

Average functioning level was close to two standard deviations below average—"so this was a very low functioning group," he added.

Mild changes in some areas but no changes in the cerebellum were noted after 35 HBOT sessions, compared with baseline, Dr. Golden said. "This is not unexpected. These children had injuries high up in the brain."

"Interestingly, you can predict reasonably well who will be a responder based on response over the first 35 treatments," he said. "Some people are just nonresponders—you can give them 200 treatments, and they will not respond. Others are marvelous responders who respond well and right away."

After a second round of 35 HBOT treatments, "there was a much greater effect on blood flow—so it seems to be a time-based effect," Dr. Golden said.

The HBOT group made major changes in all areas that were greater than either the normal or standard therapy control groups.

"This is a group who is at the end—they have failed multiple therapies. And still we have about 70% who respond [to HBOT]," said Dr. Golden. "The plasticity of the brain may be much greater than we imagined. HBOT may stimulate ability of the brain to reorganize itself."

Dr. Golden and his associates used the Vineland Adaptive Behavior Scales to rate basic adaptive, motor, and cognitive abilities "This can be used without a child having to perform for us, which is challenging with cerebral palsy," he said.

They assessed blood flow changes with a series of three single-photon emission computed tomography (SPECT) scans before, during, and after HBOT treatment. They assessed the cerebellum, pons, right and left hemisphere subcortical areas, and the cortical region.

"Improvements in motor functions [from HBOT] allowed them to do things they could not do at the beginning of the study."