Evidence for therapeutic management for children with cerebral palsy includes a diversity of intervention models that are accepted as treatment approaches. Recently, there has been a growing trend towards interdisciplinary approaches that include physical therapists, occupational therapists, and speech and language therapists who work together with the client and family to define treatment goals and objectives. Neurodevelopmental Treatment (NDT) constitutes one of the most known and accepted rehabilitation approaches for patients with neurological impairments.1

NDT is a comprehensive, interdisciplinary clinical practice model for habilitation and rehabilitation of people with neurological disorders, which focuses on individualized therapeutic management and is based on movement analysis.2 According to the International Classification of Functioning, Disability and Health (ICF), using a problem-solving approach, the therapist evaluates patient activities and participation to identify abilities and limitations, and then establishes treatment goals that are agreed upon with clients and caregivers. Neurodevelopmental Treatment focuses on understanding typical and atypical development, postural control and movement analysis, as well as activity and participation through the life span. During assessment and intervention, a dynamic interaction between client and therapist occurs, leading to optimal activation of sensorimotor components, task execution, and skills acquisition to enable meaningful participation.

Parents or caregivers of children receiving NDT interact with the interdisciplinary team across every step in the rehabilitation process. Initially, they participate when the team establishes goals or functional outcomes. During treatment planning and sessions at home, they put into practice therapeutic recommendations for daily routines, and they participate during decision-
making to move to another stage of the rehabilitation process. In pediatric courses of the Neurodevelopment Treatment American Association (NDTA), parents or caregivers of children receiving treatment are welcomed; they help therapists define short-term goals, and are present to observe functional changes in the child, which meet specific needs for daily routines.

This article documents the perspectives of family and therapists about treatment of three children with cerebral palsy who received intervention during the "NDT/Bobath Certificate Course in the Management and Treatment of Children with Cerebral Palsy and Other Neuromotor Disorders" held in Santiago de Cali, Colombia, in July, 2015. We focus on parents' and caregivers' perceptions about treatment received during the course, new knowledge acquired, the functional changes that they observed that could be significant for child and family, and the permanence of this progress after the course ended. We also explored professionals' experiences of participating in the course. Information from children, family, and therapists was obtained from evaluation and intervention reports completed during the course, and we conducted interviews after three months of completing the course.

Meet Samuel, Valentina, and Juan
Samuel is eight years old. He has cerebral palsy with dystonic quadriplegia. His functional level according to the Gross Motor Function Classification System (GMFCS) is Level V, his communication according to Communication Functional Classification System (CFCS) is Level IV, and his manual ability according to the Manual Ability Classification System (MACS) is Level V. He has restrictions for playing age-appropriate activities, interacting with peers, performing activities of daily living (ADLs), moving within his surroundings, and school inclusion. He does not have an adapted wheelchair or devices for self-care; we observed protective behavior of his family.

Samuel was treated by Michael (physical therapist) and Laura (occupational therapist). Their posture and movement objectives were to increase Samuel's sensory awareness of his body and to promote better postural organization and co-activation of flexor and extensor muscles of the trunk. At the end of the course, Samuel tried to support weight on his forearms and wrists, and transfer his weight between upper limbs, allowing the unweighted arm to initiate reaching. In sitting, he spontaneously adjusted his pelvis as a support base and increased lower limbs contact on the support surface. In side lying he reached, occasionally achieving a lateral grasp. He achieved better postural organization in supine, which facilitated transfers from bed to chair.
He was able to maintain a sitting position for up to 45 minutes. In the waiting room, before and after therapy, he showed better alignment while sitting on his mother’s legs. We noticed that Samuel had increased production of unintelligible sounds but with a communicative intention.

Valentina is three years old. She has cerebral palsy, spastic quadriplegia with a dystonic component, and greater compromise of right side. She is in Level III according to GMFCS-E & R and CFCS. She sits with flexion and internal rotation of hips and knees ("W") and may require assistance to sit. She crawls on her hands and knees and holds onto a stable surface to stand up. She drinks liquids from a cup (assisted) and produces monosyllabic sounds. She has low participation in self-care and has restrictions to participate in playing activities with peers at kindergarten.

Michael (physical therapist, C/NDT) and Leonor (speech therapist, C/NDT) were treating Valentina. Treatment objectives were to promote Valentina’s active support and seated position with feet on floor and to promote her use of her right upper limb. According to records of the course, she gained greater security during position transitions, increased use of her right arm and hand for reaching, maintained a long sitting position, established the pelvis as an active base of support facilitating postural alignment, used her feet as an active base of support with extension of her lower limbs, became involved in manual activities at a table, started taking the cup with lip seal, and increased the intensity of voice production in monosyllables.

Juan is four years old. He has a diagnosis of West Syndrome, convulsive syndrome, ventriculomegaly, hypotonia, and roto-scoliosis. His is functioning at Level V according to the GMFCS-E & R, Level III of the MACS, and Level IV on the CFCS. He has a sitting orthosis, an adapted wheelchair with head support, a feeding chair, and wears ankle braces. In order to communicate, Juan produces undifferentiated sounds. He presents restrictions for playing with peers, performing activities of daily living, and self-care. We noticed protective behaviors of Juan’s mother and grandmother. Katherine (speech therapist) and Angelica (physical therapist) were treating Juan. Treatment objectives were to promote active and selective shoulder girdle control and co-activation of the flexor and extensor muscles of the trunk in short sitting and to increase sensory awareness of upper limbs. In short sitting, we observed better head control and greater co-activation in trunk. He also could establish the pelvis as an active, stable, and dynamic base of support in short sitting. He initiated upper limb movements and used them during dressing and undressing activities. He improved his rib cage mobility, and had greater
visual contact and fixation, and more communicative intent. The family attended promptly to appointments until the fourth week of the course with high expectations about Juan’s treatment.

The Family Perspective
Andrea is Samuel’s mom. Her son’s physical therapist invited her to the NDT course. She attended the first day with the condition to withdraw if her son did not feel comfortable about it. Her initial expectation was “just that he accepted the therapists because Samuel is not an easy child to manage,” however he “easily” adapted. For Andrea, the most significant aspect was the way her son was treated. “They really considered the child rather than his disability, looking carefully at him, observing his movements and behaviour, and caring about how he felt while being treated.” About Samuel’s achievements, Andrea states, “At the course, they reinforced information about the things that we do at home – how to feed him and the way we dress him.” She acknowledges that now Samuel “is able to communicate, to interact and to receive care from different people than Grandma and me.” Another change observed by the mother was “achieving a better posture while lying and sitting, which has diminished the effort that we do during transfers.” Finally, “Samuel can now sit for longer periods of time, and this is a great achievement for us.”

Luis Carlos is Valentina’s uncle. He and Grandma are responsible for her care. From the first meeting they attended, they received information about situations that the therapists found they did not know. For instance, “the way she sits and how she supports weight on her right foot.” The most significant changes that they saw were that "she began to use her right arm more to grasp objects and to keep an open hand. She also learned to do things by herself." After the course, Valentina continues to collaborate during dressing "by putting on socks and shoes." Grandma says that she now "folds or piles her clothes and sometimes she goes to the kitchen and asks how she can help." She states that "before we felt we had to be more aware of Valentina, we could not let her alone at any time, but now she moves more, she leaves her bed by herself, she sits alone, eats and drinks from cups, and it is easier to understand what she tries to say. These changes have not only been kept, but she is making more progress."

Sandra is Juan’s mom. She notes that her child’s therapist had given her some of the information that she heard during the course. The most important “were the indications that the expert in speech therapy gave me.” She also noticed changes in "Juan’s alignment, which was achieved with the help of the therapist who ran the course." These changes have contributed to
their "daily life and the activities I perform with him in the house, as assisting him with swallowing, sensory stimulation activities, and the possibility of bringing Juan to participate at meal times by offering tastes of food." For her, also, it has been important to know that using "something simple and less technical can help your child´s participation." Although she left the course a week early, she received a home plan and followed-up recommendations at home.

Learning as a Therapist

Katherine is a speech therapist and has been working in paediatric rehabilitation for three years. Among the contributions of the course she mentions "updating theoretical foundations of Neurodevelopmental Treatment, new knowledge and skills for defining treatment goals in a given time, and treatment planning based on a cooperative work with other therapists." A key aspect was "identifying reasonable goals, giving priority to patient needs, and family expectations." She also recognises as new learning "identifying and applying objective measurements in the assessment of children, recognising information value for clinical decision-making, and how to make clear treatment gains, especially with families." She notes that she also learned "new strategies for mobilizing the rib cage using balls and seats, sitting positioning to improve breathing patterns, swallowing and feeding, how to do dynamic interventions involving parents or caregivers, and using flashy or interesting objects to improve patients' acceptance during treatment." She concludes that the knowledge and skills acquired "totally changed my practice. Now I understand that from the moment I welcome a patient until I give him back to a parent's arms, I have the opportunity to treat him."

Angelica is a physical therapist and in the last two years has worked in rehabilitation of children with neurological disabilities. She reports that during the course she gained a greater understanding of motor development, postural control, skills acquisition, and how to understand children's preferences – their acceptance or rejection of activities or resources used during treatment. She also gained abilities for teamwork. As key aspects learned from the course about assessment, she notes "the patient's posture and movement observation and then analysing these aspects with the family and finally with the therapist." She considers relevant "incorporating quantifiable parameters in the assessment, definition of functional goals at different times, and planning each session with a specific goal." The course expanded her vision of family involvement "from assessment and through all treatment phases... It has provided me with a better structure for treatment sessions, prioritizing functional goals that are significant for daily life and participation of children, and the incorporation of new treatment strategies."
Leonor is a speech therapist with 17 years of experience in NDT, certified by the European Bobath Tutors Association (EBTA). Among the theoretical knowledge provided in the course she emphasizes the relationship of concepts as "involvement, analysis, interpretation, problem-solving, and self-construction of knowledge as a foundation for neurodevelopment and for family education, the use of the ICF as a theoretical underpinning for intervention, and systems interaction to produce efficient movement." Among the contributions to her practice, she found relevant "the in-depth analysis of each position to determine the difficulty for subsequent treatment planning, the definition of functional short, medium and long-term goals, teamwork, family empowerment and involvement with to treatment."

Michael is a physical therapist with experience in paediatric rehabilitation. Among the theoretical contributions of the course, he says that the course "updated foundational knowledge about neural remodelling and neuroplasticity as well as child assessment using the ICF model and added the understanding of typical and atypical development and systems analysis to identify primary problems." He also recognizes the definition of short and long-term goals and goal-setting for each treatment session. Regarding practical contributions from the course, he identifies "using play as a therapeutic strategy, planning activities following a sequential pattern, identifying typical patterns of flexion and stability in midline by trunk co-activation." This learning has "strengthened my clinical practice with the definition of functional treatment goals and rethinking activities in a sequential order during a session."

Laura has been an occupational therapist for seven years. She notes that participating in the NDT course resulted in a "new perspective" about facilitation and its practical sense. She also cites understanding bodily organisation of the patient and therapist, the importance of incorporating playful strategies into treatment, understanding of movement for functional purposes, as when the child brings his hand to his mouth to feed, and the cues provided by the patient in order to keep or change treatment strategies.

**Summary**

NDT as a practice framework used with people with cerebral palsy and other neurological disorders and considers essential the interaction between therapist and parents or primary caregivers throughout the entire rehabilitation process. In paediatric courses of the NDTA,
training therapists works in collaboration with families of participating children to define goals and functional outcomes that are observable during course sessions.

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