YOUR DESTINATION:

SOUTHERN CALIFORNIA

If you are a physical therapist, occupational therapist, speech-language pathologist, academic, student, or other professional interested in the NDT approach to treatment, you won't want to miss this conference!

- Three-and-a-half days of focused educational sessions and lab experiences
- Distinguished faculty of renowned researchers and clinicians
- Three separate pre-conference programs
- Select sessions designed especially for therapists with the C/NDT designation
- Numerous opportunities for networking and business relationship building
- Special events including region get-together, reception, networking and awards luncheons
- Exhibitor showcase, exhibitor presentations, staffed poster sessions, and more…

CONFERENCE SESSIONS PREVIEW

NDT: Learning Daily Tasks: Evidence/Videos/Labs

Kate Bain, OT, C/NDT

How can clinicians measure functional outcomes and the related changes in posture and movement behaviours in children with cerebral palsy? In this article, I will introduce methodology, including a videotaping protocol I developed and used while studying the functional performance of children with cerebral palsy during the treatment practicums of an NDTA paediatric certificate course.

Through the completion of my clinical doctorate at Sydney University, I addressed the following question: "What is the impact of Neuro-Developmental Treatment on the functional outcomes of children with cerebral palsy, as measured by their performance in family selected daily living tasks?" The aim of three pilot studies was to focus on the relationship between intensive NDT and functional goal performance and whether observed (videotaped) meaningful clinical changes in performance could be empirically measured.

One of the purposes of the study was to create and trial an NDT Measurement Model for clinical and community use, and, to measure potential change in performance in targeted daily living tasks of twelve children with cerebral palsy following NDT intervention during the NDT certificate course.

The film set and filming protocol for the study – the 'Film Set in a Suitcase' – were developed for use in clinical or community settings with a *Magic Room* film set of approximately 10 m x 5 m as the child friendly theme. There was sufficient flexibility for filming any daily task performances. Filming occurred at pre and post intervention, and six weeks follow up. The major outcome measures were Goal Attainment Scaling (GAS), video analysis (including the use of Logger Pro with Excel for home computer measurements), and qualitative surveys of parents' and therapists' percep-

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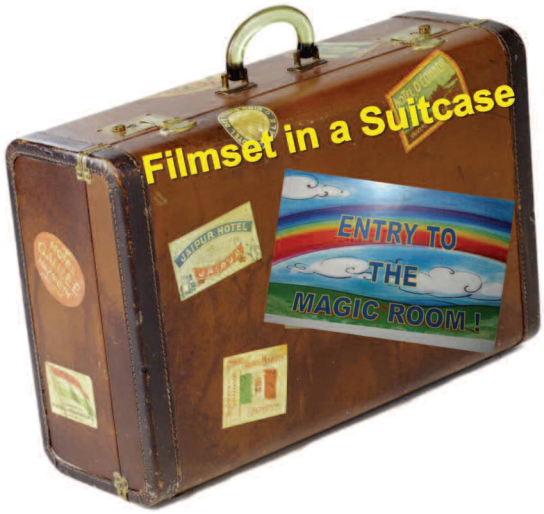
tions of functional outcomes.

This multi-methods approach generated evidence to support the use of intensive, short term NDT to improve specific functional performance of twelve children with CP. A significant improvement in GAS outcomes scored using the video protocol was observed pre-post intervention (NDTA Coordinator-Instructors: $p < 0.001$; researcher: $p < 0.001$) and this was maintained 6 weeks post intervention (NDTA Coordinator-Instructors: $p = 0.159$; researcher: $p = 0.978$). Further video motion analysis with Logger Pro resulted in details of posture and movement parameters that appear to be related to positive changes in GAS scores obtained by the children. These changes included changes in postural alignment, time taken to move during task performance, distance moved, hand expansion for grasp, and communication. While it is not possible to categorically attribute these functional gains to NDT in this quasi-experimental design, the fact that the gains made by children during the period of NDT were more dramatic than during the period of withdrawal from NDT is noteworthy, suggesting an effect from the intervention given. This measurement model demonstrated sufficient sensitivity to measure functional changes, including small one-step achievements towards functional goal improvements, with acceptable inter rater reliability (GAS) and face validity (GAS and video motion analysis).

While the results of this study suggest an intervention effect on functional outcome after NDT, this conclusion should be drawn with caution. Further research is warranted to increase participant numbers and compare outcomes via a randomized controlled trial design.

This research also addressed a number of components of, and changes to, the filming protocol. These aimed towards improving 'visibility' and clarity of children's performances in DVD footage, for increased accuracy in video analysis and rating by the researcher, and by NDT expert raters (Coordinator Instructors), blinded to the condition of intervention.

Firstly, parents gave consent for their children to attend filming sessions which comprised approximately 10 minutes filming. Extra time was allowed for each child to settle in to the waiting area of the decorated 'Magic Room', and to have ink dots applied to anatomical landmarks for purposes of later video analysis. During this period, the children looked through sticker books and later chose *lucky dips*. (For non-Australians, a lucky dip is a small wrapped package chosen from a group of wrapped packages in a party game). A research assistant (paediatric OT, C/NDT) helped each child to move to the film set, from which their parents were still visible.



Three video cameras were utilized at the front, left or right side, and overhead. A portable and flexible boom arm mount was created for the overhead camera and a housing system for the overhead camera was constructed, which allowed quick and easy changing of tapes from a small stepladder. All equipment was easily transported to the film set 'in a suitcase'.

A 1.5 metre long floor grid was pre-prepared from durable materials and easily transportable in a cardboard tube. This enabled replicable positioning of the child, equipment and toys from one film period to another, as well as the reference points for x/y coordinates for video analysis. All cameras were situated at a standard distance from each child, who was situated centrally on the grid.

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The film appointments for each child in the research project occurred at the start of course treatment practicums (pre-tests), immediately after the final practicums (post-tests), and then six weeks after the completion of the course (follow-up). The film set up included the decorations, grid, tripods, and cameras set up as described above.

The filming protocol included quietly preparing the set and cameras for each child, making sure the child was comfortable for their goal/task performance. The research assistant provided only the necessary documented assistance for safety on set. Quiet auditory signals created markers for editing the three views with 'Final Cut Pro', for simultaneous viewing on each child's pre, post, and follow up DVD by the course's coordinator-instructors. Following completion, the child was assisted to leave the film set and return to the waiting area and family. Further measures were also taken to ensure filming conditions remained constant from pre-test to post-test and follow-up, including photographic records using a stills camera.

As we learn NDT treatment strategies in lab and translate them into treatments with our children, clinically based video analysis in combination with GAS may provide useful measures in helping to answer the question "Does NDT intervention result in changes in daily task performances?"

Join me at the 2012 NDTA Conference, GPS 4 NDT for detailed information about my research.

Turning Evidence Into Practice

Roxann Diez Gross PhD, CCC-SLP
Lyndelle Owens MCD, CCC-SLP, C/NDT
Marybeth Trapani-Hanasewych MS, CCC-SLP, C/NDT

Anatomic overlap between breathing, swallowing, and voice production necessitates a multifaceted approach to examination and evaluation. Our session and lab at the 2012 NDTA Conference, GPS 4 NDT, combines Dr. Gross's research with NDT philosophy and problem solving. Attendees will learn about current respiratory-related scientific evidence that can be applied to NDT practice to improve voice and swallowing function.

The role of the respiratory system in relation to swallowing has only recently been accepted as important, despite the known fact that the upper airway serves a dual function of breathing and swallowing. We will integrate the more auditory and cognitive strategies frequently utilized within the traditional speech-language pathology (SLP) approach with the more movement based strategies of the NDT approach. For example, attendees will learn a bed mobility strategy that will improve breath-holding for increased subglottal air pressure. During the research section, you will learn the critical importance that subglottal air pressure plays in the swallowing process. During the lab section, you will have an opportunity to learn and physically try out facilitation strategies to increase subglottal air pressure with each other.

Another strategy to be covered relates directly to the individual with low intensity voicing. While increased laryngeal alignment and "volitional effort" may provide a temporary loudness, without incorporating that loudness and alignment into the patient's body schema or within other positions such as standing, walking, or lying in bed, the loudness will frequently return to its prior level of function. All disciplines can address these changes to positively affect other functional activities.

Turning research evidence into practice will provide a much needed NDT treatment problem-solving approach to identify primary impairments to direct your treatment. By addressing each patient's specific individual impairments, you will treat more effectively within the ever shortening number of treatment visits allowed in today's health care provision.

Readers of *Network* will can further their knowledge of breathing, swallowing, and voice production through these references written by the first author.

Refereed articles:

1. Dettlebach MA, Gross RD, Mahlmann J, Eibling DE. The effects of the Passy Muir valve on aspiration in patients with tracheostomy. *Head & Neck*. 1995;17: 297-302.
2. Eibling DE, Gross RD. Subglottic air pressure: A key