Research Objectives: Previously we developed a pediatric constraint induced movement therapy (pCIMT) camp to address upper extremity (UE) deficits of children with hemiplegia1. We found positive outcomes in UE function and gait. The objectives of this study were to a) assess the effectiveness of a similar camp to treat UE deficits of children with Brachial Plexus Injury (BPI), b) determine potentially similar effects in lower extremity (LE) function, and c) determine retention of these effects. Design: Randomized control study. Setting: Hospital, outpatient. Participants: 17 children with BPI, 3-7 years of age, 9 randomly assigned in the experimental group. No participant had history of other neuro-musculoskeletal injury or previous CIMT exposure. Participants could follow two step commands. Interventions: pCIMT, 30 treatment hours over 10 days. Activities focused on gross, fine motor and self-feeding skills. Control group participants had traditional occupational therapy. Main Outcome Measure(s): UE Spontaneous Function (SF) and Dynamic Position (DP) based on Shriners Hospital Upper Extremity Evaluation, and LE function based on gait velocity, cadence and step length symmetry between the involved and uninvolved sides. All data were normalized. This report focuses on the experimental group pre-, post- and 6 months post pCIMT. Results: All parameters demonstrated statistically significant improvement from pre to post testing (range p < 0.02). During 6 months post-testing, while SF returned to almost pre-testing level the rest of the parameters showed no statistically significant change. Conclusions: This is, to our knowledge, the first randomized control study investigating the long term effects of pCIMT on the function of UE and LE of children with BPI. The results demonstrate improvements in UE and LE function, gait. Although gains are retained after 6 months, it appears that LE gains are better retained. Key Words: Constraint Induced Movement Therapy, Gait, Plasticity

Disclosures: None disclosed.

Oral Presentation 420

Relationship Between Power-Wheelchair Skills and Measures of Independence and Mobility in People with Spinal Cord Injury

Nathan Hogaboom (University of Pittsburgh), Lynn A. Worobey, Deepan C. Kamaraj, Michael L. Boninger

Research Objectives: Investigate relationships between power-wheelchair skills and independence, mobility, and participation, measured by the Craig Handicap Assessment and Reporting Technique Short Form (CHART-SF) in people with spinal cord injury (SCI). Greater power-wheelchair skill capacity, as determined using the Wheelchair Skills Test Questionnaire version 4.1 (WST-Q[1]), was hypothesized to correlate with higher CHART scores.[2] Further, increased capacity to perform basic, intermediate, and advanced skill-sets, as defined by WST-Q subscales, would correlate with higher CHART-SF scores.

Design: Survey.

Setting: Fourteen SCI Model Systems Centers.

Participants: 132 power-wheelchair users with an SCI of longer than one year duration, were older than 16 years, were treated at a SCI Model Systems Center, and used a wheelchair more than 40 hours/week.

Interventions: N/A.

Main Outcome Measure(s): CHART-SF — a 400-point questionnaire that quantifies independence, mobility, occupational and social integration. WST-Q version 4.1 — a 32-item questionnaire describing various power-wheelchair skills; subscale scores (basic, intermediate, advanced) were derived from the WST-Q manual. Multiple linear-regression tested correlations between WST-Q total and subscale scores and CHART-SF scores, while controlling for subject characteristics.

Results: Higher WST-Q total scores correlated with higher CHART-SF total scores (partial-\( \eta^2 = .333, p < .001\)). Follow-up analyses revealed participants with greater basic power-wheelchair skills capacity, including utilizing power seat functions, safe chair maneuvering, overhead or floor reaching, and transferring, had higher CHART scores (partial-\( \eta^2 = .092, p < .01\)).

Conclusions: A greater capacity to perform power-wheelchair skills was related to higher CHART-SF scores. Teaching these modifiable skills to power-wheelchair users may improve independence and participation, yet longitudinal testing is needed to confirm this. Key Words: Spinal cord injury, Wheelchairs, Social participation

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Oral Presentation 428

Pillbox Use and Effectiveness in Persons with Chronic Health Conditions

Jaclyn Schwartz (Florida International University)

Research Objectives: To understand how persons with chronic health conditions use pillboxes, their satisfaction with current devices, and the impact of pillbox use on medication adherence.

Design: In this observational study, we used a convergent parallel mixed methods approach.

Setting: This study was conducted at a university-based research lab.

Participants: A convenience sample of 13 regular, 3 occasional, and 5 non-pillbox users with chronic health conditions participated in the study. Participants were community dwelling adults diagnosed with chronic health conditions on a medication regimen of 5 or more daily medications. All procedures were reviewed and approved by the University’s institutional review board.

Interventions: Not applicable.

Main Outcome Measure(s): The study included three measures, the Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST 2.0), an interview about medication routines, and a medication adherence diary.

Results: A majority of participants used pillboxes to help manage their medications. Pillbox users tended to have better medication adherence than nonusers. Participants used a variety of pillboxes differing in size, shape, and color. Users reported selecting pillboxes based on their needs in addition to the demands of their habits and medication regimens. Users were generally satisfied with their pillboxes, with an average QUEST score of 4.33.

Conclusions: Pillboxes can be an effective strategy to improve medication adherence. Improvements in device prescription, training, research, and design are needed to understand the mechanisms and size of effects of this intervention.

Key Words: Medication adherence, Self-Help Devices, Habits

Disclosures: None disclosed.

Oral Presentation 441

Effect of Time Post Stroke Onset on Ability to Make Functional Gains in Individuals Accessing a Home-Based Stroke Rehabilitation Program

Amanda McIntyre (Parkwood Institute), Allen Laura, Janzen Shannon, McIntyre Amanda, Vermeer Julianne, Ure David, Teassell Robert

Research Objectives: To determine if time post stroke onset (TPO) affects the ability of Community Stroke Rehabilitation Team (CSRT) clients to make functional gains.

Design: A retrospective chart review.

Setting: Home-based therapy offered within the Southwest Local Health Integration Network.

Participants: Individuals post stroke receiving therapy from CSRT.

Interventions: Data were obtained from the CSRT central administrative database (January 2009-September 2015). Demographic information and standardized outcome measure information were available at admission to the program, discharge, and follow-up. Linear regression analyses were completed on outcome score changes between time points to determine the effect of TPO (weeks) on functional
improvement. Subgroup analysis was completed on three TPO categories (i.e., acute, post-acute, chronic) in a repeated measures ANCOVA to determine the ability to make/maintain gains. Models controlled for age, admission Functional Independence Measure (FIM) score, and therapy intensity.

Main Outcome Measure(s): FIM and Stroke Impact Scale (SIS).

Results: In total, 1,416 individuals (53.5% male, mean age 70.0±13.2 years) accessed the CSRT program and received active therapy (≥4 visits). Regression analyses revealed no significant impact of TPO on any of the outcome variables. However, with each additional week post onset, the ability to make gains during CSRT service decreased in the FIM, SIS #1 (Physical Strength), #5 (ADLs) & #6 (Mobility). In subgroup analyses, all groups improved significantly on the FIM and SIS and maintained these gains at follow up.

Conclusions: TPO was not shown to be a significant predictor of the ability of individuals to make gains within the CSRT program. This study supports that individuals would benefit from ongoing rehabilitation services throughout their stroke recovery process.

Key Words: Stroke, Outpatient, Home-based rehabilitation

Disclosures: None disclosed.

Oral Presentation 459

Efficacy and Safety of Repeated IncobotulinumtoxinA Injections for Upper-Limb Post-Stroke Spasticity

Christina Marciniak (Rehabilitation Institute of Chicago), Atul T. Patel, Michael C. Munin, Angelika Hanschmann, Reinhard Hie hrenenzel, Elie P. Elovic

Research Objectives: To investigate efficacy and safety of repeated incobotulinumtoxinA injections for upper-limb post-stroke spasticity.

Design: A 36-week open-label extension (OLEX) of the randomized, double-blind, placebo-controlled main period of a phase III trial (NCT01392300).

Setting: Forty-six sites in seven countries (the Czech Republic, Germany, Hungary, India, Poland, Russia, and the United States).

Participants: Subjects (aged 18–80 years) with upper-limb post-stroke spasticity, who completed the 12-week main period of the phase 3 trial.

Interventions: Subjects received 3 incobotulinumtoxinA treatments (400U), injected into the affected muscles of one upper-limb at fixed 12-week intervals.

Main Outcome Measure(s): Outcome measures included: evaluation of muscle tone (Ashworth Scale (AS); Disability Assessment Scale (DAS); Carer Burden Scale; and incidence of adverse events (AEs)).

Results: In total, 248 subjects completed the OLEX. Proportions of subjects with ≥1 point improvement in AS score in each cycle ranged from 52.3%–59.2% for wrist flexors, 49.1%–52.3% for elbow flexors, 59.8%–64.5% for finger flexors, 35.5%–41.2% for thumb flexors, and 37.4%–39.9% for forearm pronators (P < 0.0001 for all). The mean DAS score for the principal target domain significantly improved from each incobotulinumtoxinA treatment to the respective 4-week assessment (P < 0.0001 for all). Significant improvements in Carer Burden Scale scores were observed for cleaning palm, cutting fingernails, and putting arm through sleeve (P < 0.0001 for all). Treatment-related AEs were reported by 9/296 subjects (3.0%), most frequently pain in the extremity (n = 2, 0.7%) and constipation (n = 2, 0.7%). Serious AEs were reported by 22 subjects (7.4%); none were treatment-related.

Conclusions: Repeated incobotulinumtoxinA treatment was well-tolerated, significantly reduced upper-limb spasticity, and led to significant improvements in muscle tone that translated into meaningful clinical improvements in disability and carer burden.

Key Words: Muscle spasticity, Botulinum Toxin Type A, IncobotulinumtoxinA

Disclosures: Christina Marciniak, Michael Munin, and Elie Elovic have received support as investigators for Merz. Angelika Hanschmann and Reinhard Hie hrenenzel are employees of Merz.

Oral Presentation 464

Randomized, Placebo-Controlled, Phase III Study of IncobotulinumtoxinA for Upper-Limb Post-Stroke Spasticity

Atul Patel (Kansas City Bone and Joint Clinic), Christina Marciniak, Michael C. Munin, Angelika Hanschmann, Reinhard Hie hrenenzel, Elie P. Elovic

Research Objectives: To study efficacy and safety of incobotulinumtoxinA for upper-limb post-stroke spasticity.

Design: Prospective, multicenter, randomized, double-blind, placebo-controlled, parallel-group study evaluated subjects over 12-weeks following a single treatment of incobotulinumtoxinA (400U) or placebo.

Setting: Forty-six sites in seven countries (the Czech Republic, Germany, Hungary, India, Poland, Russia, and the United States).

Participants: Subjects (aged 18–80 years) with upper-limb post-stroke spasticity and a flexed elbow, flexed wrist and clenched fist clinical pattern of spasticity with a muscle tone of ≥2 on Ashworth Scale (AS) at each site were eligible to enroll.

Interventions: Investigators treated the primary target clinical pattern (PTCP) with a fixed dose (flexed elbow: 200U; flexed wrist: 150U; clenched fist: 100U). Doses for other muscles were flexible.