

BOOK OF ABSTRACTS



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PHYSICAL MEDICINE AND
REHABILITATION**

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BOOK OF ABSTRACTS



03-01

A SOCIAL AND COMMUNITY BARRIER ASSESSMENT OF END STAGE RENAL DISEASE (ESRD) WITH LOWER LIMB AMPUTATIONS

Dr. David Berbrayer

Objective: To evaluate social and community barriers for ESRD with/without lower limb amputations.

Method: This qualitative, descriptive, pilot study interviewed ten patients on hemodialysis. Five ESRD patients with lower-limb amputations (four unilateral, one bilateral) were randomly studied.

Five patients without lower-limb amputations on hemodialysis were chosen randomly.

One hour semi-structured interviews used the Kidney Quality of Life Questionnaire, and the Prosthesis Evaluation Questionnaire.

The effects of disease on ADL activities, support network, awareness and access of community resources, social integration, employment and education were assessed.

Result: Two / five ESRD without amputations had diabetes. All five ESRD with amputations had diabetes. There were seven males and three females, all over 55 years.

For those ESRD without lower limb amputations, transportation and ADL was important. ESRD with lower-limb amputations were concerned about appearance and travel restrictions.

All ten individuals support for ADL were family and friends.

Education regarding community agencies and lack of resource awareness were major barriers in both population groups.

The level of social interventions with friends and family varied between people. Only one patient was still working (as a real estate broker).

The level of education and type of job they received prior retirement did not indicate their current financial situation. There was no correlation between education received and access to community resources.

Amputees understood diabetes. ESRD did not understand disease. Community agencies information packages appeared to reach the patients.

Conclusions:

1. Both groups ADL support was family.
2. Transportation problem both groups.
3. Personal appearance important for amputees.
4. Staff and patients both groups need education about community resources.



03-02

THE WHEELCHAIR SKILLS TEST: VALIDITY OF AN ALGORITHM-BASED QUESTIONNAIRE VERSION

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Objective: To test the hypothesis that an algorithm-based questionnaire version of the Wheelchair Skills Test (WST) provides a valid assessment of manual wheelchair skills.

Design: Within-participant comparisons.

Setting: Rehabilitation center.

Participants: 20 wheelchair users; 11 with musculoskeletal and 9 with neurological disorders.

Intervention: Each participant completed the questionnaire (WST-Q) and then the objective skills testing (WST).

Main Outcome Measure: The WST-Q consisted of 3 components: the knowledge version (WST-Q [K]) (structured oral questions only); the visual-aid version (WST-Q [VA]) (visual aids added for 6 of the skills); and the categorical perceived-ability version (WST-Q [PA]).

Results: The mean total percentage scores for the WST-Q (K), WST-Q (VA), WST-Q (PA) and WST were 60.5%, 62.2%, 64.0% and 59.8% respectively. Only the WST-Q (PA) was significantly different from the WST ($p < 0.05$). There were positive correlations between the objective WST and the WST-Q (K) ($r = 0.91$), WST-Q (VA) ($r = 0.91$) and WST-Q (PA) ($r = 0.83$) ($p < 0.001$ for all). The percent agreement on the individual skill scores ranged from 55% - 100%.

Conclusions: The algorithm-based WST-Q has excellent concurrent validity in comparison with objective testing, when assessing the overall manual wheelchair-skill levels of wheelchair users. It may be useful as a screening tool or when objective testing is impractical.



03-03

FUNCTIONAL OUTCOME AND RECOVERY AFTER HEROIN-INHALATION INDUCED LEUKOENCEPHALOPATHY

Dr. Jacqueline Purtzki, Dr. Andrea Townson, Joanne Robbins, PT

Objective: This case study illustrates the functional recovery of a 32 year old man who suffered from leukoencephalopathy thought to be induced from 'chasing the dragon', a term used to denote inhalation of heroin vapor. There are few cases reported in the medical literature and the long-term functional outcome for these individuals is not known.

Methods: This is a longitudinal prospective case study. The patient was assessed serially during inpatient rehabilitation and at intervals up to 8 months post-discharge. Clinical examination, Berg balance and Clinical Outcomes Variability Scale (COVS) and video analysis were used to document recovery.

Results: The patient's main physical deficits were in the area of balance, motor initiation and coordination. His Berg Balance improved from 8/56 in April 2002 to 36/56 in January/2003, 9 months later. The COVS, which is a measure of patient mobility, improved from 48/91 in April 2002 to 67/91 in January 2003. He became independent with ADLs and was able to live at home with the support of his family. Fine motor movements improved to the point where he could tie shoelaces and do up buttons.

Conclusion: The patient had a functionally significant physical recovery from heroin induced leukoencephalopathy in the areas of balance, self-mobility, ADLs and fine motor movements. This case report is the first one to follow a patient functionally after heroin induced leukoencephalopathy and suggests that partial recovery is possible. The role of initial supportive inpatient rehabilitation to facilitate discharge home to the community appears to be warranted. There is no conclusive evidence to support any particular therapy and recovery may have been mainly spontaneous. The long term functional outcome for patients with heroin induced leukoencephalopathy needs to be studied further in order to be able to provide a generalizable functional prognosis.



03-04

ROLLING RESISTANCE OF TERRAINS ENCOUNTERED BY WHEELCHAIR USERS

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Objective: To determine the rolling resistance (RR) of different terrains that wheelchair users might encounter, specifically smooth, soft and loose surfaces as well as inclines and curbs of different dimensions.

Methods: We measured the force (in N) to initially overcome RR by using a single lightweight, rear-wheel-drive manual wheelchair (Invacare LXI) that had 61-cm-diameter rear wheels with treaded pneumatic tires and no anti-tip devices. We used a 95th percentile anthropomorphic test dummy (Hybrid II) in the wheelchair. We oriented the wheelchair with the rear wheels against the terrain being studied and the casters trailing forward. The wheelchair was pulled backwards by progressively increasing weights attached, through a series of pulleys, to a horizontal strap attached to the cross-brace, using water added to a bucket for fine titration. We measured the force needed to pull the wheelchair backward at least 10 cm, on 11 different terrains. Each measurement was repeated three times.

Results: The test-retest reliability, determined by using a Pearson's correlation coefficient on the 2nd and 3rd trial was $r = 0.98$. The mean RR values, from least to greatest, were tile 31 N, 5cm gym mat 151 N, 5° incline 152 N, 1.2cm curb 269.1 N, 10° incline 285.8 N, 2cm gravel 306.4 N, 1.8cm curb 369.5 N, 2.4cm curb 452.2 N, 21° incline 473.5 N, 3.7cm curb 560.8 N, and 8cm curb > 738.7 N. The rolling resistance of terrains studied ranged from 481-2353% of the normative tile value.

Conclusion: The RR of terrains that wheelchair users commonly encounter range widely. These findings have implications for teaching wheelchair skills and wheelchair design.



03-05

RANDOMIZED CONTROLLED TRIAL OF STRENGTH TRAINING IN POST-POLIO PATIENTS

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Many post-polio patients develop new muscle weakness decades after the initial illness. However, its mechanism and treatment are controversial. The purpose of this study was to test the hypotheses that: (1) after strength training, post-polio patients show strength improvement comparable to that seen in the healthy elderly, (2) such training does not have a deleterious effect on motor unit (MU) survival, and (3) part of the strength improvement is due to an increase in voluntary motor drive. After baseline measures including maximum voluntary contraction force, voluntary activation index, motor unit number estimate, and the tetanic tension of the thumb muscles had been determined, 10 post-polio patients with hand involvement were randomized to either the training or control group. The progressive resistance training program consisted of 3 sets of 8 isometric contractions, 3 times weekly for 12 weeks. Seven healthy elderly were also randomized and trained in a similar manner. Changes in the baseline parameters were monitored once every 4 weeks throughout the training period. The trained post-polio patients showed a significant improvement in their strength ($p < 0.05$). The magnitude of gain was greater than that seen in the healthy elderly (mean \pm SE, $41 \pm 16\%$ vs. $29 \pm 8\%$). The training did not adversely affect MU survival and the improvement was largely attributable to an increase in voluntary motor drive. We therefore conclude that moderate intensity strength training is safe and effective in post-polio patients.



03-06

MEDICAL ETHICS TEACHING IN CANADIAN PHYSICAL MEDICINE AND REHABILITATION RESIDENCY TRAINING PROGRAMS

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Objective: To assess the current state of medical ethics teaching in Canadian Physical Medicine and Rehabilitation residency training programs.

Methods: A 6-question survey was sent by fax to the Program Directors of the 10 residency training programs in physiatry in Canada. This questionnaire addressed whether or not medical ethics teaching is being done, who is doing the teaching, the pedagogic method being used, the number of hours dedicated to the subject, the topics being taught and the evaluation method employed.

Results: The response rate from the questionnaire was 90%. The study confirmed that medical ethics teaching is being done in all Canadian physiatry training programs. However, the person doing the teaching, the number of hours allocated to ethics education, the pedagogic method employed and the topics being taught vary significantly from program to program.

Conclusion: Although medical ethics teaching is done in all programs, there appears to be a need for a standardized ethics curriculum and evaluation methodology. This curriculum should focus on ethical issues which are most likely to be encountered in everyday physiatric practice, and should employ small group, case-based teaching for maximum learning effectiveness. Whenever possible, teaching should be done by a physiatrist.

Key words: medical ethics, residency, physiatry, education



03-07

THE RELATIONSHIP BETWEEN TYPE A CHARACTERISTICS AND EMOTIONAL DISTRESS IN CHRONIC PAIN PATIENTS

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Objective: This study examined the relationship between Type A behaviour and emotional distress in chronic pain patients where the Type A proclivity to be hard-driving and productive could be thwarted by high levels of pain intensity.

Methods: Participants were 99 chronic musculoskeletal pain patients seen at a tertiary care clinic.

Results: 65 % were female, 74% were unemployed, mean age 43 +/- 9.6 years, mean education 12 +/- 3 years with mean pain duration of 5.02 +/- 5.8 years. The results indicated that Type A behaviour is associated with increased levels of depression and anxiety but only at high levels of pain intensity. One factor of the Framingham Type A score, retrospective report of work stress, interacted with pain intensity to predict both anxiety ($p < .01$) and depression ($p < .01$). This is consistent with the importance of work performance and productivity in these patients' adjustment to pain.

Conclusions: The theoretical and clinical implications of these findings for understanding adjustment to and development of chronic pain are discussed.



03-08

THE APHASIC STROKE PATIENT, COMPETENCY AND THE RIGHT TO REFUSE TREATMENT: A CASE OF MEDICINE, LAW AND ETHICS

Hillel M. Finestone, Jeff Blackmer

Objective: To demonstrate important medical, legal and ethical issues which the rehabilitation team may encounter when treating the aphasic stroke patient who refuses treatment.

Method: A specific case report will be introduced and relevant medical literature will be cited. The case deals with an aphasic stroke patient who refused to eat and ingest medications subsequent to arrival to the Stroke Rehabilitation Unit. Depression and pre-renal failure were particular treatment concerns.

Results: The aphasic stroke patient's outcome was dramatically altered in a positive direction, as a direct result of application by the rehabilitation team, of sound medical, legal and ethical principles. The patient's Power of Attorney and his family were all part of the multiple discussions held.

Conclusion: Knowledge of the relevant medical, legal and ethical issues can positively affect the rehabilitation team's ability to deal with the complex issue of refusal to accept treatment in the patient with stroke and aphasia. These issues will be discussed in the poster.



03-09

OSTEOPOROSIS IN MULTIPLE SCLEROSIS: RISK ASSESSMENT, FRACTURE FREQUENCY AND DISABILITY STATUS

Dr. Patricia Forgeron, BSc, MSc, MD, FRCP(C)

Objective: this study was designed to assess the risks factors for developing osteoporosis and fragility fractures in female patients with Multiple Sclerosis (MS).

Methods: 30 patients with definite MS completed an osteoporosis risk assessment questionnaire developed specifically for a female MS population. Descriptive statistics were used to summarize the responses. Quantitative data was presented as averages. Frequencies of categorical data were presented as percentages of the total sample size (n=30).

Results: the sample mean age was 51.2 yr (sd=8.4); the mean age at the time of diagnosis of MS was 39.2 yr (sd=8.7). 93% of the sample population was followed in an MS clinic. 13% were diagnosed with osteoporosis and 30% had had a BMD study completed. Risk factors for osteoporosis included post menopausal (47%), hysterectomy (30%); smoking (20%) or history of smoking (53%); history of steroid use (90%); history of fractures after the age of 35 yr (33%) and impaired mobility (96%). Of those individuals who sustained fractures, the ambulation at the time of fracture ranged from episodic imbalance to wheelchair restricted with an inability to transfer. Ambulation limitations progressed from the time of the initial fracture. Of those who fractured, the mean age at the time of fracture was 45 yr. Of all the women studied, 73% had a history of falls and 83% had a fear of falling.

Conclusion: women with MS have a number of risk factors for developing osteoporosis and are at greater risk for fragility fractures. In this sample population, fractures occurred in women at a relatively young age, when screening for osteoporosis, as per current practice guidelines in the abled-bodied population, may not be initiated. This data provides evidence for establishing a risk factor profile, investigation and management of osteoporosis in the female MS patient early in the course of their illness.



03-11

DEVELOPMENT AND VALIDATION OF THE PHYSICAL IMPAIRMENT QUESTIONNAIRE FOR MAJOR TRAUMA SURVIVORS

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Objectives: To develop and validate a Physical Impairment Questionnaire (PIQ) that will provide an estimate of the whole person impairment in patients who have suffered major trauma.

Design: Cross Sectional and correlational.

Setting: Two trauma centers in Ontario, Canada.

Participants: A convenience sample of 43 volunteer participants who had had major trauma within one year of study commencement.

Methods: The PIQ was developed as a self administered questionnaire based on the American Medical Association “Guides to the Evaluation of Permanent Impairment, 4th Edition”. Criterion validity was evaluated by comparing the correlation of two independent physician estimates of whole person impairment and the PIQ score. Construct validity was further tested by comparing the Physical Impairment Questionnaire with physical and emotional elements of Short Form 36 (SF-36) and clinical whole person physical impairment measures.

Results: Clinical assessment of whole person impairment showed adequate inter r=0.55-0.9, $p \leq 0.03$) and intra rater (r=0.62-0.85, $p \leq 0.055$) reliabilities, and was used as the gold standard measure. The PIQ correlated significantly with these clinical measures (r=0.57, $p=0.0001$). Comparison of the physical and emotional subcategories of the PIQ, whole person impairment ratings by physicians and the SF-36, demonstrated good convergent and divergent validity of the PIQ.

Conclusions: The PIQ is a reliable and valid self-administered tool that can be used to evaluate physical impairment following major trauma.



03-13

HYPERCALCEMIA FOLLOWING TRAUMATIC BRAIN INJURY: A CASE REPORT

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Immobilization hypercalcemia occurs in children and adolescents with acute neurological diseases, due to high bone turnover. It also occurs in immobilized adults with underlying metabolic or bone diseases. Immobilization hypercalcemia has been associated with immobility due to stroke, fractures, and sepsis in adults. It is less well recognized that hypercalcemia can complicate immobilization in traumatic brain injury patients with no evidence of pre-existing metabolic or bone disease. We present a case report of immobilization hypercalcemia, secondary to traumatic brain injury and multiple trauma in a healthy young female. A 30-year-old female was immobilized secondary to multiple trauma and traumatic brain injury, as a result of a motorcycle crash. She developed increasing and persistent nausea 8 weeks post-injury associated with symptomatic hypercalcemia. A Serum calcium level obtained 15 weeks post-injury was 3.11mmol/L (normal 2.23-2.58 mmol/L), and the ionized calcium was 1.67mmol/L (normal 1.21-1.36 mmol/L). These calcium levels are higher than those reported in immobilization hypercalcemia resulting from fracture or stroke in adults. The diagnosis of immobilization hypercalcemia was reached by excluding other causes of hypercalcemia. Eventually her symptoms resolved spontaneously and her serum calcium level normalized at 22 weeks post-injury. A review of the literature suggests that conservative measures including remobilization are the therapies of choice for immobilization hypercalcemia. Further studies should focus on the incidence, prevalence, and mechanism of immobilization hypercalcemia secondary to traumatic brain injury and multiple trauma.



03-14

THE POTENTIAL BENEFITS OF TREATING TBI PATIENTS ACCORDING TO FUNCTIONAL ABILITY, RATHER THAN DIAGNOSIS: PRELIMINARY OUTCOMES TORONTO REHAB (TRI)

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Objective: To examine the benefits of classifying and treating TBI patients by their function, be it predominantly Neuro-cognitive or Neuro-physical in presentation.

Method: Consent was obtained from Traumatic Brain Injury (TBI) patients admitted to a Canadian rehabilitation center, over an eight-month period. Patients were classified by predominant functional impairment into two treatment streams: 1) Neuro-cognitive (NC, n=20); 2) Neuro-physical (NP, n=19). Rehabilitation services were then received from teams highly specialized to treat either NC or NP deficits resulting from TBI. Treatment outcomes were measured by the following: Rehabilitation length of stay (RLOS), Disability Rating Scale (DRS), Functional Independence Measure (FIM), Rancho Los Amigos Scale (RLAS) and Glasgow Outcome Scale (GOS). The outcomes of patients treated by functional ability (streamed) were then compared to those of matched cohorts previously treated by medical diagnosis.

Results: NC patients had a tendency to make significantly less gains from their initial level of impairment as measured by the DRS, when compared to cohorts treated by medical diagnosis (mean gain of 1.4 points vs. 3.2 points, $p=0.04$). All other outcomes remained unchanged between NC patients and their controls. However, NP patients had a significantly reduced rehabilitation length of stay compared to matched cohorts previously treated by diagnosis (53 vs. 76 days, $p=0.01$). There were no other significant differences in outcomes between NP patients and matched controls.

Conclusion: A specialized team appears to be more effective for treatment of TBI patients with NP impairment as seen by reduced RLOS. Benefits of this include: 1) more TBI patients with NP sequelae being treated per year 2) cost-effective rehabilitation through skilled staff. However, these data do not present evidence for improved outcomes in NC patients when treated by a specialized team. This suggests that rehabilitation settings require additional tools to assess and treat TBI patients with NC impairment.



03-15

UTILITY OF A WEB BASED ELECTRONIC QUESTION DATABASE FOR RESIDENCY TRAINING PROGRAM DIRECTORS

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Residency Training Program Directors (PDs) invest considerable amounts of time setting up practice exams. With the onerous task involved in creating such examinations PDs tend to rely on databases. In Physical Medicine and Rehabilitation (PM&R) only a few programs have organized databases that usually exist for only short answer written questions. OSCE type of exams and audiovisual questions are not usually stored electronically. Written questions in the databases are usually not validated and may not be current. The time commitment in setting up and maintaining databases is demanding on program directors. This abstract will describe a pre-project survey of PD's in PM&R to estimate the time required putting together a practice examination and determining the process of quality control of the question bank. A user defined functional electronic database capable of storing various formats of questions would be developed. This database would be unique in its ability to store various formats of questions and the ability to validate questions. The ten PDs in PM&R would be permitted to sign on for a year to utilize the database. At the end of a year the utility of the database would be tracked and the PD's would be surveyed to evaluate the need for an ongoing database.



03-16

TRAUMATIC BRAIN INJURY AND ALCOHOL USE: A ONE-YEAR FOLLOW-UP

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Objectives: To determine the pattern of alcohol consumption one-year post-traumatic brain injury (TBI) and its impact on TBI outcomes.

Methods: Patients who consented to be part of the database were included. Those who consumed alcohol within one month prior to TBI were identified from this group. These patients were further divided according to alcohol consumption vs. abstinence at one-year post-TBI. Independent t-tests were performed to examine the differences between subgroups on the Disability Rating Scale (DRS), Functional Independence Measure, Glasgow Outcome Scale, and Satisfaction with Life.

Results: A total of 186 patients (M:F, 131:55) were entered into the database from 1999 – 2002. Eighty-seven (46.8%) consumed alcohol one-month prior to injury (24 females mean age 45.5 years \pm 18.0, mean education level college; 63 males mean age 43.5 years \pm 18.0, mean education level high school diploma). At one-year follow-up, abstinent patients (n=20) obtained significantly better DRS scores than patients who consumed alcohol (n=15, p=.015). No significant differences were obtained in the remaining outcome measures. Of the remaining patients, approximately 1/3 were not yet one-year post-injury, two-thirds either chose not to respond to alcohol consumption questions or were lost to follow-up.

Conclusion: The high proportion of patients who consumed alcohol prior to injury indicates that it is a high risk behaviour. This preliminary study suggests that almost half of the patients who consumed alcohol prior to TBI and returned for follow-up at one year, resumed consumption of alcohol. Disability is significantly worse at one-year in this cohort as measured by the DRS. This may prevent patients from achieving their highest level of function post-TBI. Alcohol use should be addressed by health care professionals throughout rehabilitation.



03-17

UTILIZATION OF PERSONAL LEARNING PROJECTS BY PHYSIATRISTS

Denyse Richardson

Personal Learning Projects (PLPs) are one of the continuing professional development activities of the Royal College of Physicians and Surgeons of Canada (RCPSC) Maintenance of Certification Program for specialists. These PLPs accrue credits under Section 4 of the program. They are practice-based and incorporated principles of adult learning. Therefore, it was expected that accruing credits by PLP completion would be a logical and natural choice for practicing specialists. However, an analysis of the overall participation in the 2001 year identified a surprisingly small proportion (only 13.9%) of the continuing professional development activities to be occurring in Section 4. A survey has been undertaken to establish why such disparity exists between the expected and actual utilization of the PLP. A pilot test of the survey was first distributed to a convenience sample, all Physiatrists in the Division of Physiatry at the University of Toronto. The survey was thereafter revised. Subsequent mailings to a random sample of the Physiatrists across Canada (321 who are fellows of the RCPSC) ensued. The perceived and potential barriers identified will be presented in contrast to enabling factors, which were less often reported. Options and possible solutions to the difficulties encountered will also be discussed. Considering the barriers identified, utilization of the Personal Learning Projects is likely to escalate in future.



03-18

EVALUATING THE EFFICACY AND SAFETY OF REHAB INTERVENTIONS FOR TREATMENT OF OSTEOPOROSIS AFTER SPINAL CORD INJURY

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Objective: To evaluate the efficacy and safety of passive standing versus passive standing and vibration for the treatment of lower extremity osteoporosis in subjects with spinal cord injury (SCI).

Methods: A prospective randomized single blind clinical trial involving thirty-four subjects with traumatic SCI (C2-T10 ASIA A-D) and a femoral neck bone mineral density (BMD) t-score <-2.0 SD. Eligible subjects were randomized into two intervention arms; a conventional standing frame or a conventional standing frame with vibrating platform. Subjects were asked to stand for 30 minutes on 120 occasions (10 times per month for one year). The primary outcome measure was the mean between group change in BMD of the distal femur and proximal tibia from baseline in g/cm². Secondary outcomes included the safety and tolerability of the interventions.

Results: Applying the intention to treat principle, an ANOVA for between group mean change in BMD from baseline of the distal femur and proximal tibia, did not identify a significant difference (two tailed alpha = 0.05). The within group changes in distal femur and proximal tibia BMD were clinically important. Ankle edema was the most frequent adverse effect and blurred vision the most reliable indicator of syncope onset.



03-19

TEST-RETEST RELIABILITY OF DECOMPOSITION-BASED THENAR MUNES

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Motor unit number estimates (MUNEs) provide objective quantitative data regarding the number of functioning motor units (MUs) in a muscle group. We have recently developed a decomposition-enhanced spike-triggered averaging (DE-STA) method to obtain a MUNE. The purpose of this study was to examine the test-retest reliability of this method in the median innervated thenar muscles of ten healthy control limbs. For each trial, the maximum M-potential was evoked through supramaximal stimulation of the median nerve at the wrist. Then, twenty or more MU action potential trains (MUPTs) were collected from the thenar muscles during mild to moderate contractions. DE-STA was used to extract the surface-detected MU action potential (S-MUP) associated with each MUPT. The mean size of twenty or more S-MUPs was divided into the size of the maximum M-potential to estimate the number of MUs. The repeat study was either performed on a second day or if on the same day following removal and re-application of the detection electrodes. The mean values for the two trials were very similar (248 ± 78 and 246 ± 90). Additionally, the test-retest values were highly correlated ($r = 0.89$). In conclusion, DE-STA provides a reliable method of obtaining MUNEs in the thenar muscles.



03-21

BOTULINUM TOXIN A FOR FOCAL HAND DYSTONIA: A SYSTEMATIC REVIEW OF THE RANDOMIZED CONTROLLED LITERATURE

Dr. David Mark Flascher

Botulinum toxin A (BtA) has become a first line therapy for patients with focal hand dystonias (FHD). The increasing acceptance of this treatment has been supported through several open-label trials. This article systematically examines the more rigorous randomized controlled literature for support of the popularity of BtA for FHD. Three RCTs were identified which demonstrate subjective relief of symptoms with a duration of at least 6 weeks in 30 to 90% of patients, but only one trial has been able to show an improvement in validated measures of hand function. However, the validity of the trials has been called into question due to selection bias and the possible difficulties with maintaining the blinded status of patients.



03-34

DOUBLE BLIND RANDOMIZED CONTROLLED TRIAL OF LOW LEVEL LASER THERAPY IN CARPAL TUNNEL SYNDROME

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Objectives: To test the effectiveness of low-level laser therapy (LLLT) in patients with carpal tunnel syndrome (CTS).

Design: Double blind randomized controlled trial.

Setting: University research centre.

Methods: 15 volunteers, ages 34 to 67 years old with mild to moderate CTS were randomly assigned either to the control group (n=8) or the laser group (n=7). Both groups were treated 3 times per week for 5 weeks. Those in the treatment group received 860 nm Gallium/Aluminum/Arsenide laser at a dosage of 6 J/cm² over the carpal tunnel. Outcome measures were made at baseline, mid treatment, immediately after and 4 weeks post treatment. The primary outcome measure was the Levine CTS Self-assessment Questionnaire and the secondary outcome measures were electrophysiological data and Purdue Pegboard Hand Function Test.

Results: All patients completed the study without any adverse effects. There was a significant symptomatic improvement in both the control (p=0.034) and treatment (p=0.043) groups. However, there was no significant difference in any of the outcome measures between the two groups.

Conclusion: LLLT is no more effective in the reduction of symptoms of CTS than sham treatment.

Keywords: Carpal Tunnel Syndrome, Low-level laser therapy, Randomized control trial



03-40

SURFACE IRREGULARITY, SENSITIVE METHODS TO DETECT EARLY CARTILAGE DEGENERATION

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Objective: To develop methods to quantify cartilage surface irregularity.

Method: We determined the irregularity of the femur and tibia cartilage surface on one sagittal medial mid-condylar histologic section for each of 201 rat knee joints, which were immobilized, sham-operated or normal. The distances between each point of the cartilage surface and a reference point were measured. The absolute value of the 2nd derivative of these distances corresponded to the rate of change in curvature of the cartilage surface. The percentage of the cartilage surface above a standard threshold divided by the total length of cartilage surface defined surface irregularity. We compared these data to a gold standard from the material sciences referred to as the “electronic stylus” method (ISO standards: **DIN 4777**). This method, in brief, probes the surface of a body with a stylus at 1 MHz and feeds the data through a two pass first order filter with the low pass frequency set at 20Hz. We compared data obtained with the stylus method and with ours using Pearson’s test. We then determined the sensitivity/specificity of our methods to detect joints that were immobilized from those that were sham-operated or normal.

Results: Data obtained with the material science stylus method and ours showed a correlation coefficient of 0.859 ($p < 0.001$). The methods we developed detected joints that had been immobilized for more than 2 weeks with a sensitivity of 95%. Their specificity was 94%.

Conclusion: We present quantitative, valid and sensitive methods for the measurement of cartilage surface irregularity. Combined with microscopic magnetic resonance imaging, these methods may prove superior to existing clinical tool at detecting early cartilage degeneration.



03-41

RELIABILITY OF THE VISUAL ASSESSMENT OF CERVICAL AND LUMBAR LORDOSIS: HOW GOOD ARE WE?

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Objective: To measure the intrarater and interrater reliability of the visual assessment of cervical and lumbar lordosis.

Summary of Background Data: Cervical and lumbar lordosis are frequently evaluated using visual assessment, but little attempt has previously been made to measure the reliability of visual assessment.

Methods: Twenty-eight chiropractors, physical therapists, physiatrists, rheumatologists, and orthopedic surgeons were recruited to evaluate the posture of photographed subjects (with and without back pain). Each clinician rated the lordosis of the cervical and lumbar spines as normal, increased, or decreased. Kappa coefficients (κ) were calculated to determine intrarater and interrater reliability.

Results: Twenty-eight clinicians evaluated photographs of 36 individuals (17 with back pain, 19 without). Mean intrarater reliability was $\kappa = 0.50$ (95% CI 0.02-0.98) and mean interrater reliability was $\kappa = 0.16$ (95% CI 0.00-0.48). No statistically significant difference existed among the five groups of clinicians, or between the evaluation of the subjects with and without back pain.

Conclusion: Intrarater reliability of the visual assessment of cervical and lumbar lordosis was only fair, while interrater reliability was poor.



03-42

A COMPARISON OF THE REHABILITATION OUTCOMES FOR “MIDDLE-BAND” AND “LOWER BAND” STROKE REHABILITATION PATIENTS IN LONDON

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Objective: The purpose of this study was to compare the outcomes of stroke patients admitted to two different stroke rehabilitation facilities in London. The Slow Stream Stroke program at Parkwood Hospital provides services to patients with more profound deficits, often referred to as “lower-band” patients, while the University Campus of the London Health Sciences Centre typically admits patients considered to be “middle-band” patients, or patients with moderately severe strokes.

Methods: The charts of all patients, admitted to the two rehabilitation units having suffered a stroke within 365 days of admission, between the years 1996-2001 were reviewed.

Results: There were 382 admissions to University Campus and 236 to Parkwood Hospital during the study period. Patients admitted to University Campus's program arrived significantly sooner following stroke onset (21 ± 30 vs. 67 ± 56 days, $p < 0.0001$) and were significantly younger (66 ± 14 vs. 72 ± 11 days, $p < 0.0001$). Patients from University Campus had significantly higher FIM scores, both at admission (80 ± 22 vs. 50 ± 18 , $p < 0.0001$) and discharge (104 ± 19 vs. 71 ± 24 , $p < 0.0001$), as well as a higher FIM efficiency (0.92 ± 2.0 vs. 0.29 ± 0.33 gain/day, $p < 0.0001$). However, there were no significant differences in the change in overall scores from admission to discharge. Patients from University Campus achieved an average increase in FIM score of 23.8 ± 16 , compared to of 21.7 ± 17 for patients from Parkwood Hospital ($p = 0.154$). However, the length of hospital stay was significantly shorter for patients at University Campus (37 ± 27 vs. 84 ± 41 days, $p < 0.0001$). A significantly greater proportion of patients from University Campus were discharged home (80% vs. 47% $p < 0.001$) and were walking independently at discharge (29% vs. 8.5%, $p < 0.001$), compared to those from Parkwood Hospital.

Conclusions: Although “lower-band” stroke patients were older and more impaired on admission, they achieved similar improvements in FIM scores, compared to younger, less impaired “middle-band” patients; however, their absolute level of improvement was lower and they took twice as long to achieve similar gains.



03-43

INTENSITY OF APHASIA THERAPY IMPACT ON RECOVERY

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Background: It has been speculated that the conflicting results demonstrated across post-stroke aphasia therapy studies might be related to differences in intensity of therapy provided across studies.

Aim: To investigate the relationship between intensity of aphasia therapy and aphasia recovery.

Methods: MEDLINE literature search was conducted to retrieve clinical trials investigating aphasia therapy post stroke. Changes in mean scores from each study were recorded. Intensity of therapy was recorded in terms of length of therapy, hours of therapy provided a week, and total hours of therapy provided. Pearson correlation was used to assess the relationship between changes in mean scores of outcome measures and intensity of therapy.

Results: Studies that demonstrated a significant treatment effect provided 8.8 hours of therapy per week for 11.2 weeks versus the negative studies that only provided approximately 2 hours per week for 22.9 weeks. On average, positive studies provided a total of 98.4 hours of therapy while negative studies provided 43.6 hours of therapy. Total length of therapy time was found to be inversely correlated with hours of therapy provided per week ($P = 0.003$) and total hours of therapy provided ($P = 0.001$). Total length of therapy was significantly inversely correlated with mean change in Porch Index of Communicative Abilities (PICA) scores, ($P = 0.0001$). The hours of therapy provided in a week was significantly correlated to greater improvement on the PICA, ($P = 0.001$) and on the Token Test ($P = 0.027$). Total hours of therapy was significantly correlated with greater improvement on the PICA ($P < 0.001$) and the Token Test ($P < 0.001$).

Conclusions: Intense therapy over a short amount of time can improve outcomes of speech and language therapy for stroke patients with aphasia.



03-44

METHODOLOGICAL ISSUES CONCERNING STROKE REHABILITATION LITERATURE

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Background: A comprehensive evidence-based review of stroke rehabilitation studies demonstrated a wide range of quality scores across those studies.

Aim: To determine what differences there are across studies and to provide a detailed examination of methodological issues in the stroke rehabilitation literature.

Methods: A literature search using multiple databases (MEDLINE, EMBASE, MANTIS, PASCAL and Sci Search) was used to identify all trials from 1968-2002. Studies cited in review articles or from selected study articles were also sought. Two blinded abstractors reviewed each article independently. Methodology of each article was assessed using the PEDro quality scale. Mean PEDro scores and percentage of studies meeting individual PEDro criteria was determined for all studies, for therapy-based studies only and for drug-based studies only.

Results: 272 articles investigating some aspect of stroke rehabilitation were retrieved and abstracted. Mean PEDro score for all 272 studies was 5.78 (SD 1.4). Mean scores for therapy-based studies were 5.53 (SD 1.3) and drug-based studies 6.77 (SD 1.3) with the scores between therapy- and drug-based studies significantly different ($p < 0.0001$). Issues of blinding accounted for the differences in scores between therapy and drug studies. The stroke rehabilitation literature lacked rigour in the area of concealed allocation, blinded assessors and intention-to-treat analyses.

Conclusion: Investigation of the methodological quality of stroke rehabilitation literature emphasizes the need for improved treatment protocols that taking into account previous deficiencies in published research.



03-45

A COMPARISON OF TWO QUALITY RATING SCALES IN STROKE REHABILITATION RESEARCH: PEDro VS. JADAD QUALITY RATING SCORES

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Aim: To determine whether two quality assessment tools, the PEDro scale and the Jadad scale, yield similar quality rating scores for the stroke rehabilitation literature.

Methods: A literature search using multiple databases was used to identify all trials from 1968-2002. Studies cited in review articles or from selected study articles were also sought. Two blinded abstractors reviewed each article independently. Methodology of each article was assessed using the PEDro and Jadad scales. Mean and standard error of final PEDro and Jadad scores were determined for all articles combined. The Pearson Moment Correlation was used to correlate the scales.

Results: 272 randomized controlled trials investigating some aspect of stroke rehabilitation were retrieved and subjected to quality scoring. Mean (SE) scores for the PEDro and Jadad scales were 5.78 (0.09) and 2.46 (0.07) respectively. Pearson Moment Correlation determined the PEDro and Jadad scale to be significantly correlated, ($r = 0.59$, $p < 0.01$). Although significant, the correlation was not deemed to be very strong. Further analysis revealed when examining therapy-based studies only, the scales were weakly correlated, ($r = 0.49$, $p < 0.01$) and when examining drug-based studies only, the scales were moderately correlated, ($r = 0.52$, $p < 0.01$).

Discussion: A possible reason for the weak association between the scales could be because the scales were originally developed to capture the design and conduct of particular types of study – physiotherapy vs. pain studies. As such, each scale approaches the assessment of each study in different ways.

Conclusion: Based on the correlation between the PEDro and Jadad scales, it would appear that the Jadad scale provides lesser scores in studies that cannot be double-blinded. In the stroke rehabilitation literature, where double-blinding studies is not always feasible, the PEDro scale provides a more reliable measure of methodological quality.



03-46

LOOKING FOR THE OPTIMAL CHOLESTEROL MANAGEMENT IN CARDIAC REHABILITATION: COMPARISON OF AGGRESSIVE (U.S.) AND LESS AGGRESSIVE (CANADIAN) POLICY FOR HYPERLIPIDEMIA SCREENING AND TREATMENT

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Background: There is strong evidence that early hyperlipidemia detection and treatment in coronary artery disease (CAD) patients can improve cardiac rehabilitation outcomes. Nevertheless, hyperlipidemia management in cardiac rehabilitation remains controversial. Suggested guidelines range from aggressive, in which universal screening and low treatment thresholds are recommended, to conservative, in which limited screening and higher thresholds are proposed.

Objectives: analyze the impact of different national cholesterol policies, aggressive and less aggressive, on hyperlipidemia management in CAD patients referred to cardiac rehabilitation programs.

Material and Methods: 258 charts of CAD patients referred to cardiac rehabilitation program reviewed in 2 University-based teaching hospitals, 127 in Canada and 131 in USA. Fasting lipid profile (FLP) measurement, discharge summary (DS) recommendations and prescription of statins were recorded.

Results: In US hospital FLP was measured in 122 (93%) patients upon cardiac rehabilitation referral, while in Canada - in 70 (55%) only. DS writing was better in the USA with FLP tests results dictated in 49 (37%) compared to 37 (29%) in Canada. Discharge recommendations were given in 71 (54%) US charts compared to 47 (37%) Canadians. Americans favored treating hyperlipidemia by promoting healthy life style with fewer statins-20 (15%). Their Canadian colleagues tended selecting medications – 40(31%).

Conclusions: The study data demonstrated different hyperlipidemia management in CAD patients referred to cardiac rehabilitation in USA and Canada. There was dissimilarity in physician's practice patterns related to more active promotion of healthy life style with lower statins utilization in USA. Nevertheless, hyperlipidemia management in both countries remains suboptimal.



03-47

POTENTIAL VALUE OF AN EDUCATIONAL INTERVENTION TO ENHANCE THE TREATMENT OF HYPERLIPIDEMIA IN CARDIAC REHABILITATION

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Background:

There is strong clinical and scientific evidence that early detection and treatment of hyperlipidemia in CAD patients can improve cardiac rehabilitation outcomes. Enormous efforts on the part of many professional and governmental organizations have led to the development of guidelines for optimal hyperlipidemia management published recently as the National Cholesterol Educational Program (NCEP-III). Nevertheless, rehabilitative management of CAD patients is still suboptimal.

Objective: Develop and implement educational intervention (EI) designed to improve hyperlipidemia management in cardiac rehabilitation settings.

Methodology: EI included lectures to physicians to convey NCEP-III guidelines and principles of cardiac rehabilitation; distribution of newsletters, pocket cards, posters, educational website design. EI was implemented at two university-affiliated hospitals A and B, while hospital C served as control. First chart review (166) was done before EI; second (172) was completed after EI. Chart review was focused on FLP measurement, discharge recommendations and prescription of statins upon cardiac rehabilitation referral.

Results: After EI implementation, FLP measurement in hospital A increased from 21 (38%) to 46 (74%) ($p < 0.003$) due to new standing orders introduction, and number of statin prescriptions increased from 15 (27%) to 18 (34%) (pNS). In hospital B no new orders were used and FLP measurement did not change - 49 (69%) compared to 49 (69%) as did prescription for statins - 29 (41%) and 30 (42%) respectively. In both hospitals A and B there was tendency for positive changes in discharge summary writing with more practical recommendations emphasizing therapeutic lifestyle changes and risk factors modification. No change in physicians' practice was observed at the control site, hospital C.

Conclusion: The study demonstrated positive effect of EI implementation in hospital A. It appears that practice patterns in cardiac rehabilitation can be changed with the use of concentrated educational program and reinforcing materials.



03-48

**NECK MUSCLE ATROPHY AS A COMPLICATION OF CAROTID
ENDARTERECTOMY: A CASE REPORT**

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Objective: To determine the nature of severe neck muscle atrophy followed carotid endarterectomy, by using comprehensive electrodiagnostic and imaging procedures.

Design: single case.

Setting: Rehabilitation Department of the University-affiliated tertiary teaching hospital.

Participant: patient who developed severe neck atrophy followed carotid endarterectomy, which resulted in functional dysfunction of shoulder, scapula and arm.

Case description: 89-year-old man with a past medical history significant for coronary artery disease and hyperlipidemia, underwent left carotid endarterectomy resulted in a permanent neck muscle atrophy (sternocleidomastoid, trapezius muscle). Muscle atrophy resulted in impaired function of left shoulder, scapula and arm, but improved after an appropriate rehabilitation program. Electrodiagnostic study performed one year and four years after the surgery confirmed left spinal accessory nerve injury and also demonstrated dysfunction of left high paraspinal cervical muscles (initially positive sharp waves and later, 4 years after the surgery, multiple polyphasic motor units potentials). Cervical x-ray and computer tomography scan demonstrated dystrophic intervertebral disk changes, but no disk herniation. Cervical magnetic resonance imaging revealed no evidence of spinal stenosis.

Conclusion: This clinical data suggests a combined injury to spinal accessory nerve and ventral rami of upper cervical nerves caused by scar formation in a recovery phase after carotid endarterectomy. The presence of “dying back” phenomenon from the spinal accessory nerve sheath affecting proprioceptive branches from the second, third, or fourth cervical nerves, also should be considered.



03-49

GAIT ANALYSIS OF AN AUTOMATIC STANCE CONTROL KNEE ORTHOSIS FOR A POST-POLIO PATIENT

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Objective: To determine the differences in gait parameters in a post-polio patient ambulating with a locked knee-ankle-foot orthosis (KAFO) versus a KAFO with an automatic stance phase control knee joint.

Methods: A 61 year old ambulatory male patient with post-polio was fit with a custom right KAFO. The components utilized included a Horton automatic stance control knee joint, which has both a locked setting and an automatic stance phase mode, which locks the knee at initiation of stance phase. Gait was analysed using a Motion Analysis system with real time data capture. Temporal spatial parameters, kinematics, kinetics, and electromyographic data were collected while ambulating in the locked knee mode and in the automatic stance control mode (SCM).

Results: Both conditions (locked knee and SCM) showed similar temporal spatial gait parameters. Major abnormalities in kinematic data for both conditions included increased anterior pelvic tilt, lack of flexion absorption wave in early stance on the KAFO side, and ankle abnormalities consistent with the type of orthotic ankle joint. Major differences in kinematic data with the SCM included less pelvic retraction, and near normal knee flexion in swing. Kinetic data of the normal limb in the SCM was near normal, whereas in the locked knee mode there was significantly increase demand for power generation at the hip.

Conclusion: Use of an automatic stance control knee joint in a KAFO may reduce power generation demands on the normal hip, reduce pelvic retraction, and allow a more normal swing phase on the braced side.



03-50

SYMPTOMS & SIGNS OF THORACIC OUTLET SYNDROME IN PATIENTS WITH CARPAL TUNNEL SYNDROME

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The purpose of this study was to describe the prevalence and diagnostic value of positive symptoms and provocative signs of thoracic outlet syndrome (TOS) in patients with carpal tunnel syndrome (CTS). Fifty-six patients, who had been referred for clinical and electrophysiologic (EMG) evaluation of suspected CTS, were studied. As part of the pre-EMG clinical evaluation, each patient was asked if their hand symptoms were aggravated by overhead arm positions. Physical examination included 5 provocative TOS signs (Roos, costoclavicular, Adson, Allen and Halstead) and 3 provocative CTS signs (Tinel, Phalen and carpal tunnel compression). Of the 93 symptomatic upper extremities studied, 60 (65%) had nerve conduction study abnormalities compatible with CTS. Of the patients with verified CTS, 30% had symptom aggravation with overhead arm positions. Fifty-five percent of limbs with CTS had at least 1 positive provocative TOS sign compared to 76 % of those without CTS. Likelihood ratios (the likelihood someone with CTS would have a positive test result divided by the likelihood someone without CTS would have a positive test) for the symptoms and signs assessed were: Tinel: 2; symptom aggravation with overhead arm position: 2; Phalen: 1.2; carpal tunnel compression: 0.81; Halstead: 0.71; Adson: 0.67; costoclavicular: 0.67; Roos: 0.62; Allen: 0.62. It was concluded that, although provocative TOS signs are commonly positive in patients with CTS, they are even more prevalent in patients with CTS-like symptoms but normal EMGs. However, patients with CTS are as likely to have symptom aggravation with overhead arm position as they are to have a positive Tinel sign.



03-51

FIBROUS MYOPATHY: A POTENTIAL COMPLICATION OF LONG-TERM INTRAMUSCULAR ANALGESIC INJECTION

Robert Burnham and Stephen McNeil

The purpose of this case series is to alert practitioners to a potentially serious complication of chronic pain management using long-term intramuscular analgesic injections. Both patients in this series were female chronic headache sufferers who had been managing their headache pain by self-administered intramuscular injections. Patient A was 30 years of age, had chronic post MVA temporomandibular joint pain and had been using q2-3 hour intramuscular pethidine injections for 7 years. Injections were initially done into her thighs and hip girdles but, when she developed muscle firmness and hip/knee extension contractures after 3-4 years, she started injecting her shoulder girdles and upper arms. Muscle firmness and contractures developed in the upper extremities 1 year ago in addition to wrist/finger extension weakness and flexion contracture thought clinically to represent radial nerve injury. Her contractures were painless and affected her ability to ambulate, dress and eat. Headache pain management now consists of central line infusion of hydromorphone. Patient B was a 40-year-old migraine sufferer who managed her headaches by self-administered injections of DHE, sumatriptan, pethidine, dimenhydrinate and prochlorperazine several times each week for eight years. Her hip girdles and thighs were the primary sites of injection and, after 6 years, she developed excruciatingly painful knee extension and hip extension/abduction contractures that significantly limited ambulation and most ADL functions. Range of motion was found to be significantly better under general anesthesia. Blood-work for myopathy and inflammatory disorders were negative. EMG studies were characterized by decreased insertional and motor unit activity. MRI demonstrated gluteus medius fibrosis. Vastus lateralis muscle biopsy demonstrated replacement of muscle with fibrous tissue – “fibrous myopathy”. Current pain management includes stopping the intramuscular injections, long acting oral opioids (modest effect) and a trial of constant epidural infusion of local anesthetic (complete pain relief but line infected after 4 days). She is currently awaiting a trial of spinal cord stimulation.



03-52

CASE MIX ADJUSTMENT OF FOLLOW-UP BENCHMARKS BY REHABILITATION IMPAIRMENT CATEGORIES (RICS)

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Objective: The purpose of this study was to compare the results of three-month follow-up outcomes for functional performance between data aggregated by impairment group versus rehabilitation impairment category as defined by the US Centers for Medicare and Medicaid Services (CMS).

Methods: Data from 75 rehabilitation facilities in the US that collect using the Inpatient Rehabilitation Facilities-Patient Assessment Instrument (IRF-PAI) were aggregated for the purposes of evaluating follow-up outcomes for patient functional performance. Reports were returned to facilities allowing rehabilitation administrators and clinicians the opportunity to compare facility outcomes to those of aggregate benchmarks. The original report included a mathematical average for each facility's total score on the Functional Independence Measure for each impairment group along with the range of values included in one standard deviation above and below the benchmark. The facilities' objective was to meet or exceed the benchmark value for functional performance. However, the original benchmark did not allow for variations in severity of disability in the case mix. The new report groups patients according to Rehabilitation Impairment Category (RIC) as defined by CMS and presents outcomes on the Functional Independence Measure for each of the twenty-one (21) RICS and the case-mix groups (CMGs) applicable to facilities. A method commonly referred to internal standardization was used to: 1) calculate the total functional scores for all facilities for each CMG; 2) identify the facility proportion of patients in each CMG; 3) calculate a weighted total score for every facility by CMG and RIC and; 4) display the facility weighted score in comparison to the case mix adjusted benchmark.

Results: The average total score of function for the total patient group in the unweighted benchmark was 112.47. Of the 75 facilities that submitted patient data for follow-up with CMGs, 24 facilities met or exceeded the unweighted benchmark and 51 fell below the benchmark value by an average of 5.2 points. Using weighted benchmarks, 39 facilities met or exceeded the benchmark value and 36 fell below by an average of 4.2 points. Case mix adjusting resulted in 67 of 75 facilities having their benchmark value decreased by on average of 2.6 points with a range of .2 to 8.1. Eight facilities were assigned a higher benchmark value following case mix adjustment with an average increase of 1.9 points.

Conclusion: Case mix adjusted benchmarks provide a more appropriate comparison for facilities to evaluate their outcomes by presenting facilities with weighted comparison values based on their patients' severity of disability.



03-53

NATIONAL SURVEY OF CANADIAN PHYSIATRISTS 2: CONTINUING PROFESSIONAL DEVELOPMENT, PERCEIVED USEFULNESS, AND LEARNING NEEDS

Russell O'Connor, Peter Mortifee, and Ruth Milner

Objectives: To develop a profile of current CPD activities, to establish the perceived usefulness of CPD activities now and in five years, and develop a profile of the desired CPD content for Canadian Psychiatrists.

Methods: The methodology of this study has been described in detail previously. Usefulness was ranked on a scale from 1 (not useful) to 7 (very useful) and 4 being undecided. For a CPD topic or activity to be deemed useful the topic or activity must have attained a mean score of 4 or greater.

Results: A total of 236 (80%) of 297 surveys were returned completed. Virtually all Psychiatrists use the library (93% at least monthly), and attend conferences (97% at least yearly). Currently, Psychiatrists also find the library and conferences most useful. Psychiatrists without a university appointment, those that live in towns of less than 250,000, and Psychiatrists with reduced access to CPD (at a teaching center) are less likely to participate in grand rounds, journal club, teaching (residents and medical students), and case based discussion groups. In addition those Psychiatrists without an appointment and with reduced access to CPD are also using electronic literature searches and the Internet less. Only 60% of Psychiatrists attend grand rounds regularly (at least monthly) and 26% never attend. Two thirds of Psychiatrists use electronic literature searches at least monthly. 57% of Psychiatrists use the Internet (at least monthly) for medical purposes. Psychiatrists envision computer driven CPD (electronic literature searches, the Internet, and computer based software learning programs) becoming relatively more important. The number one topic of interest for Psychiatrists across Canada was return to work, followed by radiculopathies, musculoskeletal problems of the upper extremity, pain disorders and management, and low back pain. 58% of Psychiatrists feel they are currently spending enough time on CPD activities.

Conclusions: The overwhelming response rate of 80% assures the generalizability of this survey to Canadian Psychiatrists. Psychiatrists like most physicians find the library and conferences most useful. However, Psychiatrists foresee computer driven CPD activities as more important in the future. Three of the top twelve topics of interest for Psychiatrists are intimately tied to maximizing the functional capacity of patients. We hope this information will be used regionally, provincially and nationally to help guide and tailor future CPD events to the needs of Canadian Psychiatrists.