

Rehabilitation Research Review

Making Education Easy

Issue 7 - 2009

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Welcome to the seventh issue of Rehabilitation Research Review.

In this month's edition, we profile an economic evaluation demonstrating considerable cost savings to society associated with a new co-ordinated and tailored work rehabilitation approach undertaken with workers on sick leave due to musculoskeletal disorders. In another study, researchers sought to identify patients at high risk for long-term sick leave due to low back pain; despite using a multitude of factors to develop a clinical prediction rule, its performance was moderate. The authors recommend prudence when using the prediction rule in practice.

We also discuss data from a paper highlighting the price of delay of comprehensive rehabilitation in children with severe traumatic brain injury. The authors argue for comprehensive critical care that seamlessly transitions to timely and aggressive rehabilitation to effect the greatest functional recovery.

I hope the issue is of interest and I welcome your comments and feedback.

Kind regards,

Kath McPherson

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Coordinated and tailored work rehabilitation: a randomized controlled trial with economic evaluation undertaken with workers on sick leave due to musculoskeletal disorders

Authors: Bültmann U et al

Summary: This Danish study compared the effects of a new co-ordinated and tailored work rehabilitation (CTWR) approach with conventional case management (CCM) on return-to-work of workers on sick leave for 4–12 weeks due to musculoskeletal disorders. CTWR consists of a work disability screening by an interdisciplinary team followed by the collaborative development of a return to work (RTW) plan. At 6 and 12 months' follow-up, the number of sickness absence hours was significantly lower in the CTWR group compared with the CCM group. The total costs saved in CTWR participants compared to controls were estimated at \$US1366 per person at 6 months' follow-up and \$US10,666 per person at 12 months' follow-up.

Comment: I was sent this paper (thanks to Jo Fadyl) in relation to a project we are doing developing a holistic tool for assessing 'workability' and promoting stakeholder involvement in RTW planning. Whilst this study does not involve the employer to the extent that other research is now suggesting is beneficial, the very specific focus on active management of barriers in the workplace and the environment (in addition to the focus on the client and their disability) shows promising results for both outcome and costs.

Reference: *J Occup Rehabil.* 2009;19(1):81-93.

<http://www.springerlink.com/content/w15g0523w1750015/>



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'Jumping through hoops': parents' experiences with seeking respite care for children with special needs

Authors: Doig JL et al

Summary: This Canadian study used a constructivist grounded theory approach to analyse the discourse from in-depth individual interviews conducted with 10 caregivers seeking respite care for their children with special needs. Caregivers discussed their frustrations with the process of finding and obtaining respite care, a course of action described as 'jumping through hoops'. This construct was composed of subcategories emphasising the complexity of 'navigating the system', the bidirectional process of 'meeting the requirements' and the challenges of 'getting help'.

Comment: Respite care is not what every family wants but for those who need it, it can seem crucial for survival, of the family and at times 'literally' for the carer. I guess it is inevitable that where costs need to be managed (and of course this is getting ever more pressing with the world financial situation), access to some services (including respite care but far beyond) will seem increasingly impenetrable. Our ability to 'predict' who will benefit most from support and/or intervention has got to get better if society is to best make decisions about who has the greatest need for what. Otherwise, reports of improvements in accessibility are unlikely.

Reference: *Child Care Health Dev.* 2009;35(2):234-42.

<http://tinyurl.com/d8m8da>



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Return to work in a cohort of low back pain patients: development and validation of a clinical prediction rule

Authors: Heymans MW et al

Summary: These researchers used a broad set of demographic, work, low back pain and psychosocial-related factors to develop a clinical prediction rule capable of determining the risk of sick leave lasting more than 6 months, using data from a cohort of 628 workers on sick leave for between 3 and 6 weeks due to low back pain. Cox regression analyses revealed that longer work absence is related to "moderate" to "poor" job satisfaction, a higher score of fear avoidance beliefs, higher pain intensity at baseline, a longer duration of complaints and being of female gender. The prediction model performed moderately in both outcome discrimination and calibration (0.63 for c-index and 0.90 for slope, respectively).

Comment: OK – it's not a coincidence that the next study after Doig's should identify how hopeless many of our current predictive models are. Isn't it amazing that we still can't predict outcome. Better models, particularly in relation to matching interventions and support appropriately, are certainly emerging but clearly caution about 'excluding' people from rehabilitation on the basis of current models is warranted.

Reference: *J Occup Rehabil.* 2009 Feb 18. [Epub ahead of print]

<http://www.springerlink.com/content/n76421m2gw1kr212/>

A review of instruments assessing participation in persons with spinal cord injury

Authors: Noonan VK et al

Summary: This systematic search of four electronic databases (MEDLINE/PubMed, CINAHL, EMBASE and PsychInfo) for studies published between 1980 and March 2008 reviewed six instruments assessing participation in adults with spinal cord injury (SCI): the Craig Handicap Assessment and Reporting Technique (CHART); Impact on Participation and Autonomy Questionnaire (IPA); Assessment of Life Habits Scale (Life-H); Occupational Performance History Interview; Physical Activity Recall Assessment for People with Spinal Cord Injury; and Reintegration to Normal Living Index. Evidence supporting the reliability of the instruments was reported for four of the six instruments and was adequate. Validity was assessed in all the instruments. No evidence on responsiveness was available. The authors recommend that determining what information about participation is required before selecting an instrument.

Comment: Given the emphasis rehabilitation 'says' it has on participation as an important outcome, this paper is useful for two reasons. First, it identifies a number of measures of participation for at least SCI and secondly, it identifies how weak the field is. None of the measures reviewed had good data on responsiveness (i.e. can it measure change) and that is surely a key reason for collecting such information. It's a useful reminder that just because it's *called* a measure of participation doesn't mean it necessarily measures what you think it will. The opposite of 'a rose by any other name' I guess.

Reference: *Spinal Cord.* 2009 Feb 24. [Epub ahead of print]

<http://www.nature.com/sc/journal/vaop/ncurrent/abs/sc2008171a.html>

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Speech motor control and chronic back pain: a preliminary investigation

Authors: Roy N et al

Summary: This investigation aimed to determine whether speech alternating motion rates (i.e., speech AMRs) which require rapid, reciprocally coordinated articulatory movements, were associated with chronic back pain and sought to identify factors that might mediate any observed alterations. Information was collected from 50 individuals fully or partially disabled by chronic back pain who completed standardised protocols related to pain, depression, disability, medications, as well as speech AMRs. Higher levels of back pain were significantly associated with slower speech AMRs. According to a stepwise multiple regression analysis incorporating covariates such as degree of back pain, depression, level of disability, and medication use on speech motor performance, speech motor slowness was uniquely related to back pain and the use of nonprescription pain medications, but not to level of depression or disability.

Comment: It makes complete sense that pain would inhibit effective communication. So it also makes complete sense that as health and social care professionals, we should be mindful of that in our interactions with clients. Here is evidence to suggest that time and patience are both warranted, which I for one will remember (I hope).

Reference: *Pain Med.* 2009;10(1):164-71.

<http://tinyurl.com/c87vgw>

The use of conversational analysis: nurse-patient interaction in communication disability after stroke

Authors: Gordon C et al

Summary: These researchers used conversation analysis to explore how nursing staff and patients with aphasia or dysarthria communicate with each other in natural interactions on a specialist stroke ward. The data consisted of 35.5 hours of videotape recording and field notes with 14 nursing staff and five patients with aphasia or dysarthria. Nursing staff controlled the conversations by controlling the topic and flow of conversations, creating asymmetry in all interactions. Patients had very little input because of taking short turns and responding to closed questions.

Comment: Hmm.. this seems to be another pairing of papers (with Roy's paper). Perhaps it's a strategy I should start using intentionally! Anyway, having noted the importance of time and patience for easing communication with people in pain, this paper points out that nurses (at least the ones in this study), were not particularly good at 'naturally' allowing time, even for a population with obvious communication deficits. In previous issues of RRR, we have reported on research highlighting the importance of trust in health professional/patient relationships and, 'being heard' is part and parcel of that process. Busy clinical settings are certainly not conducive to allowing time so it does make you wonder who they are designed for – patients?

Reference: *J Adv Nurs.* 2009;65(3):544-53.

<http://tinyurl.com/9vshxl>

Research Review publications are intended for New Zealand health professionals.

Developments in brain-machine interfaces from the perspective of robotics

Authors: Kim HK et al

Summary: This review discusses technological advances in measuring and decoding the electrical activity of cortical neurons in paralysed individuals. The article highlights brain-machine interface (BMI) as a potential strategy by which people with disability may restore motor skills through robotic manipulators controlled by brain signals.

Comment: At the same time as the field seems far too slow to develop, new technologies are offering great advances in rehabilitation. I find the notion of brain computer interface (or as it's called here, brain-machine interface – BMI) both fascinating and somewhat scary – brave new world, 1984 and all that. However, the evidence that it is possible to harness the brain's capacity in 'thought' to enable activity and action beyond motor ability/impairment is pretty exciting. There are some other great developments happening and we will update here from time to time about specifics as well as generality.

Reference: *Hum Mov Sci.* 2009 Feb 19. [Epub ahead of print]

<http://tinyurl.com/dkdple>



Independent commentary by Professor Kath McPherson, Professor of Rehabilitation (Laura Fergusson Chair) at the Health and Rehabilitation Research Centre, AUT University in Auckland.

Kath has been at AUT since 2004 and has been building a research, teaching and consultancy programme focused on improving interventions and outcomes for people experiencing disability.



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Rehabilitation focused on returning to productive life

Recovery in whiplash-associated disorders: Do you get what you expect?

Authors: Carroll LJ et al

Summary: These researchers investigated whether early expectations of recovery in whiplash-associated disorders predict subsequent recovery, and studied the role of “expectations” to predict recovery as determined by pain cessation and resolution of pain-related limitations in daily activities, in a cohort of 6015 adults with traffic-related whiplash injuries. Over a 1-year period following the injury, the recovery time was three times faster for those who expected to get better soon compared with those who expected that they would never get better. Findings were similar for resolution of pain-related limitations and resolution of neck pain intensity, although the effect sizes for the latter outcome were smaller.

Comment: Our team recently reviewed the literature about expectations and recovery (*J Occup Rehabil* 2008 18(4) 362-374) and agree with the authors of this paper that despite all the rhetoric about the *importance of expectations*, the field is pretty poorly understood. However, this large study, with a fairly ‘simple’ question about expectations for a speedy recovery versus not, showed the answer was a pretty powerful predictor of outcome over and above impairment and a wide range of other variables. Perhaps our models of prediction *are* improving and certainly helping people reframe inaccurate expectations (overly negative ones particularly) may be an important part of rehabilitation.

Reference: *J Rheumatol*. 2009 Feb 17. [Epub ahead of print]

<http://tinyurl.com/cr7cb5>

Disclaimer: This publication is not intended as a replacement for regular medical education but to assist in the process. The reviews are a summarised interpretation of the published study and reflect the opinion of the writer rather than those of the research group or scientific journal. It is suggested readers review the full trial data before forming a final conclusion on its merits.

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The effect of delay in rehabilitation on outcome of severe traumatic brain injury

Authors: Tepas JJ 3rd et al

Summary: Data were retrospectively analysed from paediatric trauma centre records of 60 children (mean age, 11 years) with blunt traumatic brain injury (TBI) and an initial Glasgow Coma Scale (GCS) score of ≤ 8 requiring resuscitation, comprehensive critical care, and inpatient rehabilitation, in order to determine the effect of delay of comprehensive rehabilitation, especially in cases of TBI with best potential for salvage. Mean length of stay in the intensive care unit was 11.1 days. Fifty-two children required an average of 9.4 ventilator days. Delay ranged between 0 and 24 days (mean, 4.1 days) and was significantly correlated with rehabilitation efficiency (RE) and the change in functional independence measurement scores (DeltaFIM) during the rehabilitation period (correlation coefficient, -0.346 , $p=0.0068$). The RE correlation increased to -0.457 ($p=0.011$) in children with the highest potential for salvage (moderate TBI, GCS scores 6, 7, 8), whereas those with severe TBI (GCS scores 3, 4, 5) demonstrated a weaker correlation that was not significant. In the severe TBI cases, the correlation of DeltaFIM was significant (-0.38 ; $p=0.035$).

Comment: The findings of this paper are further support for early rehabilitation (beneficial for adults as well as children). However – I really like the idea of expanding beyond ‘the golden hour’ to the ‘golden day’ and in fact – I would argue for even longer. Each paper within this month’s RRR relates a similar theme in some way with the crucial thing being to ensure the right gold is used at the right time throughout the continuum of peoples’ recovery, restoration and adaptation.

Reference: *J Pediatr Surg*. 2009;44(2):368-72.

<http://linkinghub.elsevier.com/retrieve/pii/S0022346808009536>

VINTAGE PAPER

Work potential of the handicapped: the physician’s role in evaluating it

Authors: Montero JC

Summary: This article contends that any criterion for measuring work-power levels of individuals with disability must relate the handicap to a specific undertaking in order to effectively evaluate fitness. Factors that need to be taken into account for such evaluations include the degree of exertion necessary, the emotional demands, working conditions (including accessibility of the place of work, of toilet facilities and the like) and job hazards. Physicians are advised to conduct a medical examination, review the individual’s work history, consider the person’s socioeconomic background (family history, economic level and community resources) and also psychological fitness for various work situations.

Comment: 1960 is quite some time ago (so perhaps we can forgive the title of this paper which sounds all of 50 years old!). This is the first time I have looked at a paper from the *California Medicine* but I may browse it a bit more often given that the advice to practitioners about what should be ‘appraised’ is so fascinatingly apt. Within the abstract (let alone the paper) we have the ICF (activity/participation and environmental factors) being considered along with the barriers within the workplace and beyond. The results of Bültmann’s study on page 1 in this issue of RRR (a 2009 publication) are maybe not that surprising and yet . . .

Reference: *Calif Med*. 1960;92:280-2.

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