

Rehabilitation Research Review™

Making Education Easy

Issue 22 - 2012

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Congratulations

to Graeme Nuttridge

Director of PHYSIOSOUTH

in Christchurch, who is the winner of a Garmin nuvi GPS unit from our recent Rehabilitation Research Review subscriber survey.

Welcome to this issue of **Rehabilitation Research Review**. Thanks to all who took part in the recent survey about what you like, and suggestions for change. I read all responses and you will see some developments in coming issues as a result. This issue focuses on presentations from the 7th World Congress for Neurorehabilitation held in May in Melbourne. Details are at the conference website – <http://www.dconferences.net.au/wcnr2012/> and the conference programme at <http://wcnrdownload.mobievents.mobi/WCNR%20Handbook.pdf>.

Although the conference (and hence this issue) focuses on neurorehabilitation – there is relevance across all diagnostic groups, given the centrality of the brain to all human function after all. I invited a number of colleagues attending the congress to suggest papers they found interesting and am grateful to Paula Kersten and Nicola Kayes for contributing both papers and comments. Some papers in this issue have just one person's comment, others have all three. I hope you find some of these papers (and the comments!) interesting, relevant and thought-provoking.

Kind regards,

Kath McPherson

Professor of Rehabilitation (Laura Fergusson Chair),
The Health and Rehabilitation Research Centre, AUT University
kathmcperson@researchreview.co.nz

The Michael P Barnes Lecture: Harnessing the potential of neuroplasticity to improve recovery after brain injury

Speaker: Professor Randolph Nudo

Summary: The past two decades have solidified the notion that the adult central nervous system is capable of substantial functional and structural reorganisation resulting from injury. Likewise, enormous strides have been made in developing rehabilitative interventions to improve function, at least in mildly to moderately impaired individuals, purportedly based on neuroplasticity principles. The field of neurorehabilitation is now embarking on a new period of discovery that will orchestrate the activities of scientists in widely diverse disciplines toward the common goal of rebuilding functional networks in the injured brain.

During this presentation Prof Randolph presented research on Activity Dependent Stimulation (ADS) in animal models (rats) where an implant on the brain (smaller than the size of a quarter which is 24.26mm if you didn't know) served to create an artificial bridge in the motor cortex (since there seems to be a 30-day window after injury when axons are formed in these models). When the device was switched on there were real motor improvements, and the animals were almost normal after 2 weeks. However, early testing saw improvements disappear when the device was switched off (reverting to almost the same as control rats). However, later ongoing on-off testing suggests some maintenance occurs over time. Further testing is needed to explore if motor improvements carry over in the long-term or if without the implant impaired function returns.

Comments: Paula: This was an excellent presentation, helping the non-scientist understand the changes in motor function with Activity Dependent Stimulation, using short films to demonstrate this. As Professor Randolph remarked, there are problems in translating neuroprosthetics into humans, but scientists are hopeful this can be tested clinically in future.

Kath: I missed this presentation but prompted by Paula's comment, I did a little googling (is that a verb?) and found lots of interesting information about Nudo, including an interview you can listen to at <http://www.marketplace.org/topics/life/scientists-work-rewiring-human-brains>. The notion that we might be able to bypass damaged areas in humans by inserting small brain computer interface devices may be some way off but – Nudo and his team are looking towards human trials in the next 10 years, if their work continues to show benefit.



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Plenary: Knowledge to action in stroke rehabilitation: clinical implementation of best evidence

Speaker: Professor Robert Teasell

Summary: Evidence is growing that rehabilitation has a significant impact on functional outcomes following stroke, with improvements in discharge disposition and community reintegration. There are now more than 1,000 RCTs focusing on stroke rehabilitation providing a rich evidence base, but Professor Teasell estimates a 17- to 60-year gap between discovery and chance in practice in rehabilitation. Whilst clinical care provided in accordance with evidence-based guidelines is associated with improved outcomes, it is well recognised this frequently does not occur. In Ontario, evidence suggests that failure to practice in accordance with established guidelines may negate the benefits of specialised organised interdisciplinary care.

Professor Teasell referred to a ladder of knowledge translation that moves from establishing the evidence through to dissemination, uptake and application to improve outcome and he argued that it gets increasingly difficult the further you move up the ladder. He described an audit-feedback model incorporating four steps to enhance knowledge translation:

- 1) Establish best practice: Determine best evidence/best practices from evidence-based reviews (EBRs) and national guidelines;
- 2) Audit to determine actual practice: Evaluate actual practices through clinical record reviews, clinical observations and provincial databases;
- 3) Gap analysis: Combine #1 and #2 to determine the evidence-implementation gap;
- 4) Strategy development: Develops implementation strategies to address this gap.

This audit-feedback model is now being translated across Ontario for selected areas where it was demonstrated guidelines were not being implemented (an evidence-implementation gap), including for example: intensity of therapy; screening, assessment and treatment of post-stroke depression; screening and assessment of cognitive disorders; assessment and treatment of urinary incontinence; and outpatient therapies. One example was where a chart audit of a number of Ontario rehabilitation units found screening of stroke patients for depression was actually a very rare event, and professional assessment uncommon, although pharmacological treatment was frequent. Subsequent examination of attitudes, beliefs and barriers to best practices found that ignorance of guidelines and a belief that screening tools were no better than clinical observation were key barriers to implementation of post-stroke depression guidelines. Strategies to ensure compliance with guidelines are now being developed including guidelines being rewritten in an unambiguous and specific manner so they can be clinically implemented and that implementation easily audited.

Comments: Paula: This presentation was an excellent reminder of the large body of evidence for stroke rehabilitation and the Stroke Rehab Evidence-Based Reviews (www.ebrsr.com) is a valuable resource for busy clinicians (there are also sites for SCI and TBI). It is timely to unpick stroke rehabilitation in New Zealand to explore where our evidence-implementation gaps are and what can be developed to address these. This should take into account our unique funding system and cultural diversity.

Nicola: This presentation also highlighted that despite *establishing evidence* being the first rung of the ladder, it is where the greatest proportion of resources is directed. Successful knowledge translation doesn't just happen – it requires explicit focus and greater acknowledgement of it being a core part of the research process. A dilemma we frequently face in our own research team is how to support translation of findings when that requires a fundamental shift in thinking or way of working. Such a step is arguably a more complex layer of translation than that addressed in Professor Teasell's presentation, where the focus was on implementing guidelines. A more in-depth exploration of implementation strategies, which may facilitate such change, would be great to see.

Kath: There were many things in Robert Teasell's presentation that were fascinating. I'll note just two here. Firstly, not only does it take about two generations for research to lead to change in practice, he suggested as much as 99% of evidence never makes it into practice at all. Something is not right if that's the case don't you think.... Secondly – Teasell reported a frequent response he gets when delivering the message of 'following the guidelines is the best way to improve outcome' is for people to say it takes too long and costs too much. But his data, and that of others, suggest this is not the truth. For example, in the situation above where following guidelines would mean formal screening for depression – the improvement in diagnostic accuracy goes from around 33-50% accurate up to 98% and the process is cost-neutral (fewer drugs going to the people who need them) and hence far more cost-effective. Changing anyone's behaviour is challenging – but changing clinician behaviour may be more important for improving outcome than we give it credit for.



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Psychological Management of Stroke Symposia: Developing screening systems to detect emotional changes after stroke

Presenter: Dr Ian Kneebone

Summary: Depression after stroke is common and can have a substantial effect on rehabilitation outcome. Despite recommendations that screening for depression be routinely undertaken following stroke, UK research reports it happens only half of the time. Given the limited access to psychology resources, the onus falls on rehabilitation practitioners who are well positioned to undertake screening due to their ongoing involvement with people post-stroke. However, despite the large number of screening instruments available, there tends to be confusion over what instrument to use, with whom, and when. In this presentation, Dr Kneebone talked through the development and implementation of a screening protocol to be administered by Occupational Therapists in a post-acute inpatient stroke unit. The screening protocol takes the form of a decision tree to help the clinician to decide which screening tool is the most appropriate, also accounting for cognitive and communication impairments. The protocol includes optimum screening timeframes (between 5 to 15 days of admission) and training for clinicians regarding what to do if someone expresses suicide ideation and what the likely response should be (including referral, watchful waiting, medication). Subsequent work has included the development of a protocol for use in the community.

For more information about these screening protocols check out:

Kneebone II, Baker J, O'Malley H (2010). Screening for depression after stroke: developing protocols for the occupational therapist. *British Journal of Occupational Therapy*; 72(2):71-6.

Kneebone II, Neffgen LM, Pettyfer SL (2012). Screening for depression and anxiety after stroke: developing protocols for use in the community. *Disability and Rehabilitation*; 34(13):1114-20.

Comments: Nicola: The topic of this presentation raises an important issue that is not isolated to stroke management. Depression and other psychological disorders are commonly underdiagnosed in a range of chronic disabling conditions frequently leading to less than optimal outcome for those affected. I would venture to suggest that we face a similar problem in NZ with regards to routine screening practices. I have spoken to many clinicians who admit that even when screening is carried out, the screening form is commonly filed away to gather dust as opposed to the findings of that screening tool stimulating action; the well-known 'yellow flags' questionnaire being a good example of this. This presentation served as a timely reminder of our responsibility to screen for and respond to psychological disorders in those living with chronic disabling conditions. The New Zealand Guidelines Group document for the *Identification of Common Mental Disorders and Management of Depression in Primary Care* is a document worth becoming familiar with. Dr Kneebone's screening protocols also serve as a useful resource for those working with populations where cognitive and/or communication impairments are common.

Kath: There is a clear connection between this paper and that of Teasell referred to earlier. Whilst the issue (screening for depression) is important in itself, I think it pays to think more widely about the general issue of using standardised assessment tools for screening and of course evaluating the impact of what we do by using standardised outcome tools. Thankfully, it seems there is a real shift to accepting the value of evaluation as a core component of service delivery. Without knowing the outcome, all we know is how busy we are, not what the busy-ness results in.

Improving walking after stroke: the AMBULATE trial

Authors: Ada L et al

Summary: The main aim of the Australian AMBULATE randomised controlled trial was to determine the effect of a community treadmill walking programme in improving community ambulation. 102 community-dwelling people after stroke who were able to walk independently but slowly were randomly allocated to either a 4-month training group, 2-month training group or the control (no intervention) group. Two-thirds of the training consisted of walking on a treadmill. Overground walking aimed to increase step length, reinforce what was happening on the treadmill, getting to walk faster, decrease step width, improve endurance, and improve automaticity (e.g. introducing dual tasks). The interventions took place 3 times a week for 45 minutes. Measurements of walking capacity (six-minute walk test) were taken at baseline, 2 months, 4 months, 6 months and 12 months. The Adelaide Activities Profile was used to measure community participation.

Both treadmill groups improved significantly more on the six-minute walk distance than the control group and the group that trained for 4 months had better outcomes at that time point than the group that had trained for 2 months. However, at 12 months there was no difference between the groups. There was no difference between the groups on community participation at any time points.

Comment: Paula: This is another study that showed that people can improve with intervention even years after a neurological event such as a stroke. The authors suggest that community-based opportunities for ongoing walking training should be developed. We are currently testing whether behavioural change strategies alongside interventions help people maintain their exercise programmes without on-going interventions.

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A consensus on stroke early supported discharge

Authors: Fisher R et al

Summary: Trials have shown that Early Supported Discharge (ESD) after stroke can reduce long-term dependency and admission to institutional care and reduce the length of hospital stay (Langhorne 2005). This study aimed to reach consensus about ESD amongst trialists who contributed to the Langhorne review. A modified Delphi approach with 10 ESD trialists was carried out. An agreed list of statements about ESD was generated from the Cochrane review and three rounds of consultation completed. ESD trialists rated statements regarding team composition, model of team working, intervention and success. Consensus of opinion (>75% agreement) was obtained on 47 of the 56 statements. They found that multidisciplinary, specialist stroke ESD teams should plan and co-ordinate both discharge from hospital and provide rehabilitation in the community. Specific patient eligibility criteria (safety, practicality, medical stability, disability) need to be followed to ensure this service is provided for mild to moderate stroke patients who can benefit from ESD. Length of stay in hospital, patient and carer outcome measures and cost, need to be routinely audited. The consensus document (Fisher et al. 2011) developed as part of the study can be used by commissioners and service providers in implementing ESD services.

Comment: Paula: This study was conducted by and with an international group of leading researchers in the field of stroke. It suggests that amongst these people there is good agreement on ESD processes. It would be interesting to further explore whether these ESD guidelines are implemented in routine practice. It should be noted that those countries that took part in the study have better developed community rehabilitation services than in New Zealand. Translation to our setting will therefore not be straightforward.

PLENARY SESSION 2: THE NORINGTON LECTURE

Self-regulation concepts in brain injury rehabilitation

Presenter: Dr Tessa Hart

Summary: This presentation discussed the application of self-regulation concepts in brain injury rehabilitation and reviewed theories from other disciplines besides brain injury rehabilitation, such as health psychology and health education, which explain and enhance long-term, adaptive behaviour change. Dr Hart referred to examples from some of her recent work that illustrate how these theories may be adapted to theoretically motivated interventions for brain injury.

Comment: Kath: This presentation provided a very useful overview of self-regulatory theory and its potential in rehabilitation with specific examples of Tessa's own research. What I like about exploring self-regulation *theory* and rehabilitation is that it is absolutely *practical*. It makes an explicit connection between goal progress or failure and mood (hence the potential importance of helping people get more success than failure), it puts the person at the centre of their rehabilitation (the meaningfulness of goals being core to success) and it identifies key tipping points towards failure that we should prevent (people get easily derailed or find it hard to get started). Strategies for each of these may be core for successful goal-setting with patients or clients and failure to consider them may mean all that effort we spend on goals is.... dare I say wasted?

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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.

For full bio [CLICK HERE](#).

Paula Kersten is a physiotherapist and Associate Professor of Rehabilitation at AUT who moved to NZ from the UK in 2011. Her main research interests are in improving outcome measurement.

Nicola Kayes is a health psychologist and Senior Lecturer in rehabilitation. Her main interests are in exploring the use of psychological principles by non-psychologists.

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Catchy phrases from the conference

One of my favourite things about conferences is hearing phrases that catch your ear – here are just a few.

“ Why use measures? Because logical reasoning is not always correct ”
- Barbara Wilson (delivering a talk for Caroline van Heugten)

“ In theory there is no difference between theory and practice.
In practice there is ”
- Robert Teasell attributed to Yogi Berra a former American Major League baseball player.

“ 99% of evidence never makes it into practice ”
- Robert Teasell

“ Lying down – magnetic mattress or not – does not help the brain.
To help the brain you must do something ”
- Jurg Kesselring

“ Chinese used to pay their doctors according to how healthy the population was because of the inherent conflict of interest of paying them according to the proportion of sickness they deal with.
If there is no illness, there would be no payment in our systems
so is it in our interests that people are ill? ”
- Volker Hoemberg

“ There are now more than 400 RCTs in stroke at least 6 months post
– but only 15 of these are focused on psychosocial interventions ”
- Robert Teasell

“ Control groups in rehabilitation studies should receive something
for a real comparison because – something is always better than nothing ”
- Bruce Dobkin

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