REFINE – reducing falls in inpatient elderly using bed and bedside chair pressure sensors linked to radio-pagers in acute hospital care: a randomized controlled trial

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Background: Advances in sensor technology afford innovative approaches to reducing falls in acute hospital care, however its clinical and cost-effectiveness has not been evaluated in the UK.

Method: Pragmatic, parallel-arm, randomized controlled trial of bed and bedside chair pressure sensors using radio-pagers (intervention) compared to standard care (control) in high-risk elderly patients admitted to acute, general medical wards, in a large UK teaching hospital. The primary outcome measure was the number of inpatient bedside falls per 1000 bed days.

Results/findings: A sample of 1839 participants were randomized (918 to intervention and 921 to control). There were 85 bedside falls (65 fallers) in the intervention group (falls rate 8.71 per 1000 bed days) compared with 83 falls (64 fallers) in the control group (falls rate 9.84 per 1000 bed days) (adjusted incidence rate ratio 0.90; 95% confidence interval 0.66 to 1.22; \( P = 0.5 \)). There was no significant difference between the groups in time to first fall (adjusted hazard ratio 0.95; 95% CI 0.67 to 1.34; \( P = 0.12 \)). The mean cost per patient in the intervention group was £7199 compared to £6400 in the control group, mean difference in QALYs per patient = 0.0001 (95% CI, –0.0006 to 0.0004; \( P = 0.67 \)).

Conclusion: Bed and bedside chair pressure sensors as a single intervention strategy are not effective or cost-effective in high-risk elderly patients in acute general medical wards. Our findings confirm those from a small non-randomized study and a recent large cluster randomized randomized controlled trial, and extends the generalizability from previous studies to the UK healthcare setting.
Prevalence of visual impairments after stroke

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Background: Visual impairments impact functional outcome and quality of life following stroke. We lack reliable data on their prevalence; estimates from selected populations range between 20 and 74%. Accurate information is essential in order to inform the development of interventions and provision of services. We sought to quantify the prevalence of visual impairments among unselected acute stroke patients.

Method: We extracted data on unselected, consecutive patients from the registry section of the Virtual International Stroke Trials Archive (VISTA-Plus). Visual impairments were defined using items 2 and 3 of the National Institutes of Health Stroke Scale (NIHSS), recording eye movement disorders and visual field defects. We determined the proportion and types of visual impairments observed at baseline.

Results/findings: We extracted data on 7257 patients (median age = 70, interquartile range (IQR) = [60, 78]), median baseline NIHSS score = 4, IQR = [2, 10]; 6463 (89.1%) patients had an ischaemic stroke while 616 (8.5%) had intracerebral haemorrhage. At baseline 2062 (28.4%) patients presented with some form of visual impairment. Eye movement disorders were present in 1408 (19.8%), with partial gaze palsy affecting 886 (12.5%) patients; 1225 (17.3%) presented with hemianopia. Those who presented with visual impairments were typically older (Mann–Whitney Test P < 0.0001, z = 9.0) and had more severe strokes (P < 0.0001, z = 43.7) than those without visual impairment at baseline.

Discussion: The sample size, patient population and methodological rigour lend support to our findings that over 25% of patients present with visual impairment after stroke.

Conclusion: This major stroke-related impairment merits further investigation in research and clinical settings to inform current practice.

The association between urinary urgency and falls in older women

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Background: Multiple falls risk factors have been identified including urgency incontinence. Explanation for the association between falls and urgency incontinence has yet to be established. We hypothesize that an urgent desire to void affects gait in older women with urgency.

Method: Prospective observational study of three groups of women (n = 51): young healthy women (n = 17), older healthy women (n = 17), and older women with urinary urgency (n = 17). Gait analysis was undertaken at three bladder conditions: (a) empty bladder, (b) first desire to void (FDV), and (c) strong desire to void (SDV). Spatial and temporal
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gait parameters were recorded and gait variability (coefficient of variation) was calculated for each parameter at each time point.

**Results/findings:** In all the women a pattern of reduced velocity (0.05 m/s; \(P = 0.002\)) and reduced stride length (5.9 cm; \(P < 0.0001\)) was observed between the empty bladder and the strong desire to void conditions. A strong desire to void was associated with a significant reduction in mean stride length for young women (8.45 cm; \(P < 0.01\)), older healthy women (4.5 cm; \(P < 0.01\)) and older women with urgency (4.65 cm; \(P < 0.0001\)). A pattern of increased variability in all gait parameters was found in younger women and older women with urinary urgency at strong desire to void. This pattern was consistent across all gait parameters.

**Discussion:** It is suggested that younger women have the capability to adapt their gait to meet bladder-related demands. Older healthy women adjust gait speed and stride length to reduce variability when experiencing strong desire to void. Older women with urgency reduce gait speed and stride length, but gait variability increases, reducing overall stability. Dual-task interference may explain this observation.

**Conclusion:** The slower speed, shorter steps and increased variability observed indicate that strong desire to void affects the pattern and rhythmicity of walking, suggesting a relationship between higher centre control of bladder function and gait.

A Cochrane systematic review of occupational therapy for care home residents with stroke

**Background:** A quarter of care home residents in the USA and UK have had a stroke and stroke is the second most common cause of disability in the care home population. It is not known whether the benefits of occupational therapy found among community-dwelling stroke survivors would be seen in the care home population. This systematic review aimed to measure the effects of occupational therapy interventions targeted at improving, restoring and maintaining independence in activities of daily living (ADL) among care home residents with stroke.

**Method:** We searched the Cochrane Stroke Group Trials Register, MEDLINE, EMBASE, and 11 other databases; seven trials registers; and hand-searched seven journals. Randomized trials of occupational therapy interventions for care home residents with stroke versus standard care were selected for inclusion. Two reviewers independently assessed all titles and abstracts, selected trials for inclusion, and extracted data to ensure reliability. A third reviewer resolved discrepancies. The primary outcomes were performance in ADL at the end of scheduled follow-up, and death or a poor outcome.

**Results/findings:** The search returned 1436 unduplicated records. Of these, nine studies were reviewed in full. One study, involving 118 participants met the inclusion criteria for the review. One ongoing study also met the criteria but had no data available.

**Discussion:** There was insufficient data to determine the efficacy of occupational therapy interventions for improving, restoring or maintaining independence in ADL for care home residents with stroke.

**Conclusion:** The effectiveness of occupational therapy for care home residents with stroke remains unclear. Further research is needed.

Clinical use of the Euroqol EQ5D-5L in community rehabilitation: item bias and disordered thresholds identified

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Background: Health-related quality-of-life (HRQOL) is often reported using single-digit indices derived from preference-based instruments such as the Euroqol EQ5D. This widely used generic HRQOL instrument presents five health items (indicators): mobility (MO), self-care (SC), usual activities (UA), pain/discomfort (PD) and anxiety/depression (AD). The EQ5D was recently revised from three levels to five response categories (hence 5L). Rasch analyses were selected to investigate the properties of the tool and assist in describing the rehabilitation service users.

Method: Electronic Health Record database entries were interrogated for EQ5D information and entered into RUMM2030. Data were partitioned by gender and into three age groups (<60; 60–80; 80+).

Results/findings: Data were available from 1906 patients seen by community rehabilitation (average 74 ± 17 years, range 17–102, 39% male) over 10 months from July 2012. Ordering of item difficulty was as follows UA, MO, SC, PD, AD (logit range −1 to +0.8) and inspection of item–threshold plots indicate that it shows impressive targeting (all but 4% of the sample). Three of five questions showed disordered thresholds (SC, UA, AD) that merited rescoring (collapsing levels 4 and 5). Significant differential item functioning (DIF) by age was noted for MO, UA and AD (F > 8.5, d.f. = 2, P < 0.0002). DIF by gender was noted for PD and AD (F > 11, d.f. = 1, P < 0.0008).

Discussion: The order of item difficulties reflect the priorities of community rehabilitation – people seeking support to return to usual activities and improve mobility. Sources of misfit in the tool are important to recognize and guide further analysis.

Conclusion: The EQ5D-5L has merit as a generic patient reported outcome measure, but analysis of data captured using it can benefit from using this modern psychometric approach.

Can stroke-specific vocational rehabilitation (SSVR) be delivered and measured? Feasibility randomized controlled trial and economic analysis

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Background: A quarter of UK strokes occur in working age people. Fewer than half resume work. Rehabilitation frequently fails to address work needs and evidence for post-stroke vocational rehabilitation is lacking. This pilot trial tested the feasibility of delivering stroke-specific vocational rehabilitation and measuring its effects and costs compared to usual care.

Method: Previously employed stroke survivors aged ≥16 recruited from a stroke unit were randomized to receive stroke-specific vocational rehabilitation or usual care. Exclusion criteria: refusing consent; not intending to work, medical preclusion. Primary outcomes: occupational and benefit status.
Mood, function, participation, quality of life and resource use were measured using standardized and bespoke postal questionnaires at 3, 6 and 12 months. Service use was cross-referenced in 10% of participants and costs calculated.

**Results:** Forty-six of 126 patients screened (36 men, mean 56 (SD 12.7, 18–78 years) were recruited in 15 months; 40 declined. Most (29) had National Institutes of Health Stroke Scale (NIHSS) scores ≤15, were in professional roles (65%), self-employed (21.7%) at onset. 32 available at 12-month follow-up, with poorer response (61%) among usual care group. Intervention was successfully deployed in 22/23 cases. Thirty-nine per cent returned to work at 12 months – twice as many in the stroke-specific vocational rehabilitation group. There was more depression and productivity loss in the usual care group, especially at six months. Cross-referencing for five participants involved 51 phone calls, 23 letters/emails. Self-reported and actual service use data were discrepant. Stoke survivors underestimated GP and consultant input and overestimated therapy input.

**Discussion:** Stroke-specific vocational rehabilitation can be delivered and its effects and costs measured. More reliable methods of capturing service use, income and benefit data and clearer definitions of work are needed.

**Conclusions:** Findings inform the definitive trial.

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**The effects of dual task on turning ability in stroke survivors and older adults**

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**Background:** Turning is an integral component of independent mobility, during which stroke survivors frequently fall.

**Objective:** To investigate the effects of competing cognitive demands on the stepping patterns of stroke survivors while turning compared to those of healthy older adults as a possible mechanism for falls.

**Method:** Walking and turning (90°) was assessed under single-task (walking and turning alone) and dual-task conditions using a pressure-sensitive walkway. The dual task was subtracting serial 3s from a random number in the 100s while walking and turning. Dependent measures were time to turn, variability in time to turn, step length, width and single support time while turning. These parameters in single-task and dual-task conditions were compared between 17 stroke survivors (mean time post stroke = 59 ± 113 months; age = 64 ± 10 years; 6 right paretic) and age-matched older adults (n = 15).

**Results/findings:** All results presented as mean ± SD. Both groups took longer (P < 0.001, 2.2 ± 0.46 s for dual task and 1.92 ± 0.34 s for single task), were more variable (P < 0.001, 0.22 ± 0.10 s for dual task and 0.12 ± 0.06 s single task), tended (P = 0.51) to widen the second step of the turn (58.87 ± 13.11 cm for dual task and 56.66 ± 12.37 cm for single task) and, crucially, increased single support time (P < 0.001; 0.52 ± 0.10 s for dual task and 0.46 ± 0.07 s for single task) on the inside leg of the turn when distracted. Older adults prolonged single support time more than stroke survivors when distracted (P < 0.001; 0.57 ± 0.11 s for older adults and 0.47 ± 0.09 s for stroke survivors), but there were no other differences between groups in response to distraction.

**Discussion:** Increased time in single support while turning and distracted may represent a biomechanical mechanism for increased risk of falls in stroke survivors and older adults.

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**Supporting employed patients with musculoskeletal conditions: a UK survey of occupational therapists**

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Background: Musculoskeletal conditions are a common cause of sickness absence and work disability. Occupational therapists regularly treat patients with these conditions but little is known about the work-related advice and support they provide to patients and their employers. 

Method: A postal questionnaire survey was conducted of UK occupational therapists who treat employed patients with musculoskeletal conditions in community/outpatient settings. Questions included the provision of work-related advice and support, the interventions used and communication with employers. Questionnaires were posted to 960 hospitals/units identified through NHS websites to reach as many respondents as possible; the survey was available on-line.

Results/findings: Two hundred and seventy-nine questionnaires were analysed and 257 respondents reported on their provision of work-related advice and support. Over 30% reported that this involved a moderate amount of their time. One hundred and fifty-four respondents had contacted employers. Just over one-third had met with patients’ employers in the previous 12 months. Fifty per cent reported that they had sufficient time and resources to communicate with employers, 47% were concerned about the legal implications and almost 30% reported that they felt they did not have the appropriate skills. Just over half reported that employers did not readily communicate with them.

Discussion and conclusion: The findings demonstrated considerable variations in service delivery, interventions and the contact therapists had with employers. Several factors impacted on therapists’ communication with patients’ employers. These need urgent attention if the profession is to meet the challenges of the government’s agenda for health and well-being at work and the work needs of patients with musculoskeletal conditions.

An introduction to mindfulness and its benefits following transient ischaemic attack and stroke

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Background: Epidemiological studies demonstrate an association between perceived psychological stress and ischaemic stroke. A feature of stroke is recurrence (30–40% within five years). Equipping patients with skills to reduce/manage perceived psychological stress may represent an important secondary prevention intervention. Increasingly, mindfulness-based interventions are offered as therapeutic interventions in psychotherapeutic settings. A typical weekly intervention comprises eight 2-hour sessions, and includes body scanning, sitting meditation, hatha yoga and loving-kindness meditation. Mindfulness-based interventions are group-based self-management programmes which help people with long-term conditions cope with physical, psychological or emotional distress. Review evidence suggests significant benefits across a range of physical and mental health problems. We found no review specific to stroke; therefore we undertook a systematic review to evaluate mindfulness-based interventions following transient ischaemic attack/stroke.

Method: Six databases were searched using subject headings/keywords. Papers were screened using review-specific criteria. Critical appraisal/data extraction were conducted independently by two reviewers. Meta-analysis was not possible; therefore findings are presented in narrative form.

Results/findings: Four studies (160 participants) were reviewed. Three papers reported group interventions; one reported a one-to-one intervention. The results demonstrate a positive trend in favour of mindfulness-based interventions across a range of psychological, physiological and psychosocial outcomes, including anxiety, depression, mental fatigue, hypertension and perceived health. No evidence of harm was found.

Discussion: Mindfulness-based interventions may be beneficial across a range of psychological, psychosocial and physical limitations induced by transient ischaemic attack/stroke; they are unlikely to cause harm.

Conclusion: Mindfulness-based interventions have therapeutic potential following transient ischaemic
attack/stroke but paucity of evidence prevents overt recommendation to incorporate them into practice; further investigation is warranted.

‘Our need to manage our exercises!’: preliminary findings from stroke survivors for key factors required to self-manage physical exercises for stroke rehabilitation after discharge

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Background: Stroke is the largest single cause of major disability worldwide (2011). Physical consequences of stroke are often long-lasting. Generic stroke self-management programmes have been shown to be safe, feasible and acceptable. However, little is known about the specific factors required to facilitate the engagement of stroke survivors with continued self-managed physical exercises after discharge.

Method: Semi-structured interviews were conducted with 18 community-dwelling stroke survivors and eight carers. Stroke survivors had mobility difficulties in daily activities based on the Rivermead Mobility Index and had no cognitive impairment based on the Montreal Cognitive Assessment. They were purposively recruited via voluntary stroke groups. Interviews were recorded, transcribed and analysed using content analysis.

Results/Findings: Five major factors required to self-manage exercises were identified from the perspective of stroke survivors and carers: external support and reassurance (N = 18), motivation (N = 14), simple and specific instructions (N = 14), application of self-monitoring and self-regulation (N = 12), and personalization of the exercise programme (N = 10). They perceived these factors are important for stroke survivors to continue to self-manage their physical exercises after discharge from specialist services.

Discussion: Physiotherapists and occupational therapists should consider these factors prior to discharging stroke survivors to facilitate the long-term self-management of physical exercises for continued rehabilitation.

Conclusion: These findings suggest concepts that need to be considered before prescribing physical exercises for stroke survivors to self-manage. Further research is needed to identify practical ways for clinicians to apply the factors required to support self-managed exercises.

Usability and acceptability of stroke-specific vocational rehabilitation: a post-trial interview study

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Background: The stroke survivor’s voice has been identified as a key priority when evaluating rehabilitation interventions. Employer involvement in vocational rehabilitation studies has been largely absent yet their influence considered important. This study aimed to explore stroke survivors’ and employers’ views of the vocational rehabilitation intervention received in a feasibility randomized controlled trial.

Method: Semi-structured interviews with 13 mild/moderate stroke survivors (8 men aged 45–79 mean 61 SD 11.63) – 10 in full-time paid employment, 3 part-time volunteers – and 6 employers post-intervention completion, explored acceptability, usefulness and vocational rehabilitation implementation issues. Thematic analysis by three independent researchers followed recording and verbatim transcription.

Results/Findings: The most valued aspects of intervention content were emotional support, provision of stroke-specific information and feedback and the planning, implementing and reviewing of a phased return to work. Liaison with the workplace was particularly valued by employers. Continuity, accessibility and knowledge of therapist, individualized intervention and liaison with other services were aspects of
intervention delivery commended by stroke survivors and employers. However, for some, the timing and duration of the intervention were not appropriate to their needs and this appeared to be linked with stroke severity.

**Discussion:** Intervention appeared to influence the timing and success of work return. Opinions were divided on whether the NHS should or could fund this type of intervention and whether employers would be willing to contribute to the costs.

**Conclusion:** Trial participants and employers found stroke-specific vocational rehabilitation useful, acceptable and influential in terms of return to work outcomes. Funding, targeting and implementation require further debate.

A national survey of occupational therapy provision for care home residents with stroke: what is routine practice?

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**Background:** Occupational therapy can specifically target the consequences of stroke by increasing independence in daily activities and improving environmental ergonomics. This survey collected data on the content of occupational therapy for care home residents with stroke in the UK.

**Method:** Novel approaches were used to establish current UK practice. Following ethical approval, occupational therapists were invited by email, social networking sites and flyers at conferences to participate in an on-line questionnaire survey. The questionnaire collected data on respondents and service delivery (process and content).

**Results/findings:** One hundred and fourteen questionnaires were analysed from occupational therapists across the UK; the majority were employed by the NHS (n =82, 72%). Sixty-two (54%) had neurological expertise, of whom 18 (29%) were stroke specialists. Ninety-two occupational therapists (81%) had worked with stroke survivors in a care home setting in the last year. More than two-thirds of these (n =62, 67%) had received stroke-specific training. ‘Bobath’ and ‘splinting’ were among the three most common training themes. The Bobath approach was used by 42% (n =39) of occupational therapists working with residents with stroke. Splinting was a more frequently delivered intervention with this population than the practice of self-care activities, task-based exercises, environmental adaptations and cognitive rehabilitation. Three (4%) occupational therapists were funded to provide a splinting service only to care home residents.

**Discussion:** Despite the lack of evidence supporting the efficacy of the Bobath approach and splinting with stroke survivors, both are common aspects of routine practice in care homes.

**Conclusion:** Stroke survivors in care homes are not routinely receiving evidenced-based occupational therapy.

What is a return to work after stroke? Twelve-month work outcomes in a feasibility trial

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**Background:** Return to work is an outcome in determining the effectiveness of rehabilitation post stroke. However, stroke survivors may return to different roles with altered work status. Income, hours, responsibilities and job satisfaction may be reduced. Stroke survivors may be dissatisfied if unable to resume previous work status; alternatively adjusted work status may be viewed positively if perceived as a way of reducing the risk of another stroke. The purpose of this study was to explore what is meant by return to work.

**Method:** Information about the nature of return to work (job type, hours, roles, responsibilities) was extracted from 3-, 6- and 12-month follow-up
postal questionnaires in 46 stroke survivor participants in a feasibility randomized controlled trial investigating effectiveness of a vocational rehabilitation intervention.

**Results/Findings:** Participants took a mean 90 (SD 70, range 7–227) days to return to work. 19/46 reported working at 12 months. In 17 who supplied complete data, 7 (41%) reported reduced working hours. Participants incurred a mean wage loss of 44% against pre-stroke earnings; 10/17 (59%) participants were in the same job with the same employer and 6 (35%) were working in different/modified jobs (1 missing); 10/17 (59%) had workplace adjustments; 18/46 (39%) participants were happy with their work situation.

**Discussion:** Participants experienced marked changes in work status post stroke, with implications for job satisfaction, financial security and quality of life. Research into psychological adjustment following altered vocational status in stroke survivors is warranted.

**Conclusion:** Return to work is a complex outcome and may not translate to a return to pre-stroke vocational status. It is important to consider what constitutes a return to work following stroke.

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The use of a parallel cohort study in a randomized controlled trial design: the Home Visit after Stroke (HOVIS) study

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**Background:** Rehabilitation interventions and procedures may become incorporated into routine practice without robust evidence of efficacy or effectiveness. This poses a challenge for researchers as withholding a routine treatment in order to establish a control group may be considered unethical and result in recruitment difficulties. This was the case for pre-discharge occupational therapy home visits.

**Method:** The Home Visit after Stroke (HOVIS) feasibility study combined a parallel cohort with a randomized controlled trial. Researchers worked collaboratively with ward-based occupational therapists to identify patients for the cohort for whom therapists considered a visit ‘essential’. Patients for whom there was clinical uncertainty about the need for a visit were recruited to the randomized controlled trial. Consent was obtained for all participants. After recruitment ended, interviews with the occupational therapists (n = 6) were conducted to explore their experiences of the study.

**Results/findings:** During the first six months there was similar recruitment to the randomized controlled trial and the cohort (n = 25 randomized controlled trial, n = 24 cohort). However, during the following 10 months many more patients were recruited to the randomized controlled trial (n = 68 randomized controlled trial, n = 9 cohort). Findings from interviews with occupational therapists suggested that they became more comfortable with randomization and were therefore more willing to enrol patients into the randomized controlled trial.

**Discussion:** This methodology increased acceptability of the research to ward-based staff, and facilitated successful recruitment to the randomized controlled trial. Parallel cohort–randomized controlled trial designs have also been used in surgical and medical research and have potential for further use in rehabilitation research.

**Conclusion:** The gap between academia and clinical practice may be bridged using methods that combine clinical concerns and research rigour.

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Pharmacological modulation of the motor control network in chronic traumatic brain injury survivors

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**Background:** Patients post traumatic brain injury present to health services with late-stage motor control deficits (after six months). To provide rehabilitation to this group it is important to understand the deficits associated with their motor control network and whether its enhancement can be mediated pharmacologically.

**Method:** We used a double-blind placebo-controlled design with two age-matched subject groups ($n = 14$): healthy controls and chronic traumatic brain injury patients. Both groups underwent an fMRI experiment with a finger opposition task. Traumatic brain injury patients were scanned on two different occasions, one hour after the oral administration of either placebo or 30 mg of methylphenidate (randomized order). fMRI data were analysed with statistical parametric mapping (SPM) using a subtraction analysis between the movement and rest blocks.

**Results/findings:** The healthy controls group activated the expected motor control network, which included contralateral motor areas, bilateral cerebellum and ipsilateral thalamus. Patients taking placebo activated a left lateralized aspect of the motor control network while patients taking methylphenidate activated a more extensive motor control network that included the basal ganglia. Functional connectivity analysis showed greater connectivity between the nodes of the motor control network in the healthy controls group when compared to patients with placebo.

**Discussion:** Reduced motor control network connectivity in patients taking placebo was found in post/pre-central, subcortical areas and cerebellum. Patients taking the drug displayed connectivity patterns that were closer to the healthy controls group with differences only in thalamic and supramarginal connectivity.

**Conclusion:** The results suggest that methylphenidate may facilitate interactions within the motor control network and this in turn may augment motor output.

**Validity of ultrasound measurements of glenohumeral subluxation in people with stroke**

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**Background:** Glenohumeral subluxation is reported in up to 81% of patients with stroke. Previous studies have reported good intra- and inter-rater reliability and discriminant validity for ultrasound method of glenohumeral subluxation in patients with stroke. The aim of this study was to retest discriminant validity and to test the concurrent validity of the ultrasound method of glenohumeral subluxation on a large stroke population.

**Method:** Patients with one-sided weakness ($n = 105$; 51 men, 54 women; $71 \pm 11$ years) who gave informed consent, were recruited. Portable ultrasound equipment was used and ultrasound measurements were recorded by a physiotherapist with patients seated in a standardized position. The fingerbreadth palpation method was undertaken by clinical physiotherapists working in local hospitals. The discriminant validity was assessed by comparison of...
acromion–greater tuberosity (AGT) distance measurements in stroke-affected and unaffected shoulders. Concurrent validity of ultrasonographic measurements of glenohumeral subluxation was compared with the palpation method. 

**Results/findings:** The mean AGT distance was 2.2 cm (SD ± 0.6) and 1.8 cm (SD ± 0.4) for the affected and unaffected shoulders respectively. Repeated-measures ANOVA showed a significant mean AGT difference between affected and unaffected shoulder measurements (0.4 ± 0.5 cm, $P < 0.001$). Using Spearman rank correlation coefficient, a moderate correlation ($r_s = 0.52$, $P < 0.001$) was found between ultrasound measurements of glenohumeral subluxation when compared with the palpation method. 

**Discussion:** Findings from this first study provide parameters for the discriminant and concurrent validity of the ultrasound measurements for the assessment of glenohumeral subluxation in patients with stroke. 

**Conclusion:** The ultrasound method of assessing glenohumeral subluxation has been found to be valid in patients with stroke. It has potential for use as an outcome measure both in research and clinical fields.

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**Power wheelchair navigation following stroke: evidence from simulated hemianopia**

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**Background:** Guidelines governing the provision of powered wheelchairs in the UK tend to exclude patients with hemianopia from accessing assessment. However, studies exploring visual search behaviour suggest that many patients with hemianopia are able to compensate effectively for their visual deficit. Here, we explored the impact of simulated hemianopia on power wheelchair navigation in a group of unimpaired individuals. 

**Method:** Ten participants each navigated 36 trials of an obstacle course in a powered wheelchair under two blocked conditions; 18 trials with normal vision and 18 trials with simulated hemianopia (achieved using specialist adapted glasses). Performance was assessed by the number and side of errors, and time of completion. Learning within each block was examined by considering performance in the early, middle and late phases of each block.

**Results/findings:** In both conditions there was evidence of a learning effect, indicated by a significant main effect of phase for errors ($P < 0.05$) and time ($P < 0.001$). Performance was equivalent for errors ($P = 0.2$) across the two different conditions and participants became faster in the simulated hemianopia condition ($P < 0.05$), suggesting a general learning effect across the experiment. Participants were equally as likely to have collisions on their ‘blind’ and ‘normal’ sides ($P = 0.7$).

**Discussion:** In the absence of any other deficits, there is rapid and effective compensation following the introduction of an intervention removing half the normal visual field (simulated hemianopia). 

**Conclusion:** The data here suggest that hemianopia alone should not exclude individuals from accessing assessment for a powered wheelchair, as is currently the case.

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**A grounded theory study of the contribution of the nursing team in promoting the mobility of hospitalized older adults**

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**Background:** Mobility is an important determinant of quality of life in late adulthood. However, advancing age is often accompanied by worsening mobility, which may deteriorate further following illness or hospitalization. Targeted inpatient rehabilitation interventions have the capacity to maintain and promote older adults’ mobility, although it is unclear how the nursing team contributes. A study was undertaken to examine the nursing team contribution to patients’ mobility rehabilitation. This presentation will summarize key findings.

**Method:** Grounded theory methods structured the study. Data were collected in three hospital
settings (general rehabilitation, spinal injuries and stroke rehabilitation) and included 39 semi-structured interviews with rehabilitation staff and 61 hours of observation.

**Results/findings:** The nursing team involvement in patients' mobility maintenance and rehabilitation was explained by the core category, ‘Care to keep safe’. This identified that the nursing team focused on preventing patient problems rather than rehabilitation goals in response to a work environment which was perceived to be time pressured and governed by an organizational policy that prioritized risk assessment and accident prevention over individualized patient needs.

**Discussion:** Low mobility and hospital-induced functional decline are an important source of iatrogenic harm. Setting clearer standards of care for mobility maintenance and the implementation of nurse-driven mobility protocols could be helpful.

**Conclusion:** It is important for nursing teams to take an active role in implementing intentional strategies to maintain and promote mobility. However, significant changes in the micro and macro context for rehabilitation practice are required to support this.

**Discussing sexuality after traumatic brain injury: perceptions and experiences of professionals**

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**Background:** Research indicates that although 50–60% of people who have had a traumatic brain injury experience changes in sexual functioning, sexuality remains largely unaddressed in rehabilitation. Studies have investigated professionals’ perspective of communicating about sexuality post traumatic brain injury, with a number of barriers being identified. However, as studies have tended to use quantitative methodologies, it was felt that qualitative research would provide a richer understanding. The aim of this study was to explore professionals’ perceptions and experiences of discussing sexuality with service users who have had a traumatic brain injury.

**Method:** This study employed a qualitative design. Purposeful sampling was used to recruit 24 participants from two local NHS trusts, and from a national charity. Four focus groups were carried out with pre-existing teams of professionals, using a semi-structured interview schedule. Focus group data were transcribed verbatim and analysed using thematic analysis.

**Results/findings:** Six main themes were derived from the analysis: (1) sexuality after traumatic brain injury is a specialist issue; (2) sexuality is a sensitive subject; (3) practicalities of discussing sexuality; (4) roles and responsibilities; (5) dilemmas about risk and vulnerabilities, and (6) organizational and structural factors. Each of these themes have between two and five subthemes.

**Discussion/conclusions:** In order that sexuality becomes accepted as an integral part of holistic rehabilitation, it is recommended that a more proactive approach is taken. It is recommended that sexuality is incorporated into assessments, and that written information is available for service users. Support for professionals is also needed in the form of the development of policy, ongoing training and supervision.

**Factors relating to driving ability in multiple sclerosis: a systematic review**

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Background: The importance of assessing fitness to drive in people with neurological conditions is recognized. This review aimed at investigating physical, cognitive, sociodemographic and driving-related factors relating to driving ability in people with multiple sclerosis.

Method: A systematic literature search of electronic databases from their inception to year 2012 was performed. Factors related to driving performance were identified using a conceptual model of driving. Different outcome measures were included to assess driving ability. Methodological quality of studies reviewed was assessed.

Results/Findings: Fourteen studies were identified that met the eligibility criteria. The relationship between driving and various neuropsychological tests was outlined. Specific tests that assess cognitive domains of attention, information processing, visuospatial and executive skills were found to be significantly associated with a range of driving outcomes. The Stroke Driver’s Screening Assessment was the most consistent cognitive predictor of on-road driving performance. There was some evidence that road sign knowledge and modifications in driving behaviours could influence driving outcomes. Additional factors relevant to driving ability, such as physical disability, sensory function and sociodemographic characteristics yielded inconsistent results.

Discussion: A combination of cognitive tests tapping multiple cognitive domains relevant to driving ability could be used in people with multiple sclerosis. Methodological limitations and inconsistent findings between studies were discussed.

Conclusion: Future better quality research is required to determine the clinical utility of cognitive tests for assessing fitness to drive in the context of multiple sclerosis.

Supporting task sequencing for people with dementia: how should prompting be delivered?

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Background: Many people with dementia want to continue carrying out simple activities at home. However, completing multi-step tasks can be affected by loss of short-term memory. We investigated how technology might provide prompts by comparing the effectiveness of different types of prompts using set tasks.

Method: Nine people with mild or moderate dementia and their partners or relatives carried out task-sequencing trials at home to compare different prompt types. The two were a card-and-envelope task and a CD-player task. Trials were video-recorded and scored using a custom scoring system (worst = 0, best = 14). Text, audio, photo and video prompts were each tested in isolation.

Results/findings: The numerical scores for the envelope task showed that text prompts (mean score 11.9) and audio prompts (12.1) were more effective than photo (6.9) or video prompts (7.3) at supporting task sequencing. The CD task showed no significant difference between prompts.

Discussion: Text and audio prompts were reliable for steps which could be conveyed using language. Photo prompts and video prompts were sometimes useful to indicate important visual choices, but were not as widely applicable as text and audio prompts.

Conclusion: There is clear potential for supporting people with dementia to carry out tasks by using technology to deliver prompts. The effectiveness of prompting depends on the format used to deliver the prompts as well as the familiarity of the task and the type action being described.