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Chest Heart & Stroke Scotland

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International consensus recommendations for measuring what matters in stroke upper limb rehabilitation and research

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Glasgow Caledonian University and Chest Heart and Stroke Scotland.

Background: Randomised controlled trials (RCTs) of stroke upper limb (UL) rehabilitation interventions use numerous outcome measures, hindering comparison and pooled analyses. There is a need for international consensus on outcome measures for stroke UL RCTs, with consideration of the outcome that matter to stroke survivors, carers and clinicians, feasibility, psychometrics, and the International Classification of Functioning, Disability and Health (ICF) domain(s) addressed. We aimed to develop international consensus recommendations (the SMART toolbox) to support informed selection of measures for use in future RCTs and clinical practice.

Method: Phase 1: Systematic identification of measures from RCTs within the Cochrane Overview of stroke UL rehabilitation.
Phase 2: Focus groups and interviews with stroke survivors, carers and clinicians to identify important outcomes related to life with UL dysfunction. Systematic identification of where these important outcomes were captured by existing measures.
Phase 3: International e-Delphi with stroke UL rehabilitation researchers and subsequent consensus meeting with stroke survivors, carers, clinicians and researchers to select measures for inclusion in the SMART toolbox.

Results: Phase 1 identified 144 measures from 243 RCTs. Phase 2 participants (n= 53 stroke survivors and carers; n=58 clinicians) identified 66 important outcomes. Phase 3 e-Delphi participants (n=55 from 17 countries) identified 28 measures for discussion at the meeting. Meeting participants (n=16) selected: specific pain rating scales; Dynamometry; Action Research Arm Test; Fugl-Meyer Assessment (UL-section); Wolf Motor Function Test; Barthel Index; Modified Rankin Scale; Motricity Index (UL-section); Box and Block Test; Motor Activity Log 14; Nine-Hole Peg Test; Functional Independence Measure; EQ-5D and Canadian Occupational Performance Measure.

Conclusion: The SMART toolbox contains 15 measures which can be selected for use in future stroke UL RCTs which will facilitate data comparability and aggregation to identify effective UL interventions to inform clinical practice. Clinicians can use the SMART toolbox to guide measure selection for stroke survivors undergoing UL rehabilitation.

Student Learning and Engagement in an Intensive Comprehensive Aphasia Programme

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Background: In collaboration with the Adult Speech and Language Therapy community service in Renfrewshire and Chest Heart and Stroke Scotland, Speech and Language Therapy (SLT) students from the University of Strathclyde undertook the delivery of an Intensive Comprehensive Aphasia Programme (ICAP) in October 2018. The aim of the project was to impact and evaluate service provision for individuals with aphasia whilst utilising and developing the emerging skills of student SLTs in an innovative way.

Method: The project drew upon the growing evidence base which indicates that intensive and comprehensive aphasia therapy programmes give rise to positive outcomes for individuals with aphasia. The therapy programme was offered to nine participants and comprised of daily intensive, individually tailored therapy targeting impairment and functional communication for a period of two weeks.

The ICAP was attended by thirty SLT students. One final year student assisted clinicians to design and deliver the program during eight sessions and the remaining two sessions were attended by half a class of second year students on each occasion. The ICAP was embedded into the second year aphasia teaching and the students were supported by a member of university teaching staff to engage with individualised learning tasks that were dependant on their previous level of relevant experience and their preferred learning styles.

Results: Pre and post measures of participant outcomes indicated improvement across all measures; picture naming, number of information carrying words used, and Communication Outcomes After Stroke (COAST) scores. Participants reported positive outcomes such as 'improved confidence' and 'hope'.

Pre and post measures of student confidence levels in their ability to make clinical observations, deliver therapy, facilitate aphasia groups and engage in supported communication all showed an improvement for the majority of students, and 100% agreed that they would recommend the ICAP as a learning opportunity to others.

Discussion and Conclusion: The positive outcomes of this project indicate that innovative collaboration can enhance SLT service provision and embed evidence based practice in student education. As such, further collaboration is planned.

Use of the Theory of Planned Behaviour to predict adherence to use of AFOs in people with stroke

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Background: Ankle-foot Orthoses (AFOs) can be used to manage gait impairments, following a stroke. However, non-adherence to AFOs is an inefficient use of resources, and poor adherence is associated with inferior physical and mental health outcomes. A theoretical approach to understanding adherence to AFOs is important because interventions based on theory are more successful in changing behaviour. This investigation, examined the utility of the Theory of Planned Behaviour (TPB) (Ajzen, 1991) in predicting intention and adherence to AFO use in people with stroke.

Method: A prospective design was employed. Forty-nine participants who had been prescribed an AFO following stroke in NHS Lanarkshire, completed a postal questionnaire. Regression analyses were conducted to identify predictors of intention, and use of the AFO as recommended. Correlational analyses were conducted between the underlying beliefs, intention, and behaviour to identify the most appropriate beliefs which might be targeted in a future intervention to increase adherence.

Results: Adherence to use of AFOs as recommended was 63%. The TPB accounted for 57% variance in intentions and 42% variance in adherence to use of AFOs. Attitude was the only significant predictor of intention, and intention was the only significant predictor of behaviour. The attitudinal beliefs positively associated with intentions were, using my AFO will: increase my mobility ($r=.50$, $p< .001$); and help me to improve during rehabilitation ($r=.32$, $p=.04$). The attitudinal beliefs negatively associated with intentions were: using my AFO as recommended; will be heavy ($r=-.55$, $p<0.01$); cause me pain or discomfort ($r=-.33$, $p=.03$); and requires a lot of effort ($r=-.30$, $p=.049$).

Discussion/ Conclusion: The TPB is a useful model for understanding adherence to AFOs in people with stroke. This study also provides insights into the beliefs which might be

targeted in a future intervention designed to increase adherence to use of AFOs in people with stroke.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Poster presentations

1: The SaeboGlove Evaluation Trial (T-SET)

Authors:

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Background: Impaired active finger extension is common after stroke. It hinders participation in functional rehabilitation and predicts poor recovery. The SaeboGlove assists finger extension and may help. We performed a single group open pilot feasibility trial of the SaeboGlove in people with recent stroke.

Methods: People with reduced active finger extension who were deemed able to participate in rehabilitation (+/-help of a carer) were enrolled during their index hospital admission. Participants received 4-weeks of repetitive functional-based SaeboGlove therapy involving goal setting, independent practice and weekly physiotherapy review plus usual NHS care. We assessed self-reported adherence, adverse events, participant, carer and therapist views, durability of gloves in clinical use and five performance measures; upper limb function (ARAT), gross dexterity (BBT) and perceived functional upper limb use (quality, quantity and percentage of tasks executed) (Motor Activity Log).

Results: Twelve patients commenced therapy (mean age 62 (range 47-80), days post stroke 27 (range 4-80) and ARAT score of 15.9 (range 0-44)). All participants completed the trial performing therapy on 85% of available days (mean repetitions 81.2 per session). There were no related serious adverse events or adverse events. There was a significant improvement in all five performance measures. Feedback from patients, carers and therapists was positive. No obvious wear or tear was observed on a glove washed ten times.

Discussion: Self-directed repetitive functional-based practice involving a SaeboGlove is feasible, safe, and acceptable to patients, carers and therapists early after stroke. Measures of motor performance improved.

Conclusion: Further controlled and randomised studies are required and planned.

Acknowledgements

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2: Augmented Upper Limb Physiotherapy for Acute Stroke Survivors undergoing Inpatient Stroke Rehabilitation; a feasibility study

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Background: Arm function can be affected by stroke and improving arm function after stroke was identified as one of the top 10 research priorities by health professionals, stroke survivors and carers. Current practice regarding the rehabilitation of stroke survivors during the acute stage is focused mainly on the lower limbs. With an expected increase in stroke incidence, similarly a decrease in physiotherapist numbers, implementation of non-supervised augmented intervention is required. Web-based physiotherapy (WBP) is a novel mode of rehabilitation delivery. This study aim is to assess the feasibility of conducting a randomized control trial to examine the effectiveness of augmented upper limb physiotherapy, delivered via WBP, in addition to usual care compared to usual care alone, in in-patient acute stroke survivors.

Method: A total of 30 stroke survivors will be recruited from three acute stroke units and randomised into two groups: intervention and control. Participants in the control group will receive usual care only while the participants in the intervention group will undertake a progressive, individualised 4 weeks upper limb physiotherapy intervention delivered via WBP in addition to usual care. Study assessments will be at baseline, and at four weeks. Primary outcome measure is feasibility of the study in terms of adherence to augmented intervention, recruitment strategy, participants' attrition and participants' safety. Secondary outcome measures: The Action Research Arm Test, Modified Ashworth Scale, Trunk Impairment Scale, Modified Tardieu Scale, National Instituted of Health Stroke Scale, Modified Rankin Scale and participants' feedback. In addition, the feedback of the physiotherapy staff and carers of stroke survivors in the intervention group, including the use of the WBP will be evaluated.

Results: To date, we have recruited 21 stroke survivors and 4 carers. Data collection will be complete by August 2019. Preliminary findings showed positive results in terms of the feasibility of the study and participants' feedback.

3: Game Technology to Support Arm Rehabilitation After Stroke

Authors and Institutional Affiliations:
Edward Averell, Dr Don Knox, Prof Frederike van Wijck, Glasgow Caledonian University

Background: With the aim of increasing patient motivation, computer games have drawn the attention of researchers, medical and allied-health professionals as a supportive means of rehabilitation. Through modern game technology, therapeutic actions can be embedded within a game play context and quantitative performance metrics can be gathered to demonstrate outcomes. While evidence supports the potential benefit of game technology, there is a significant gap in research incorporating Rhythmic Auditory Cueing (RAC), the practice of synchronising movements with a periodic rhythm [1]. However, the nature of the rhythmic stimulus utilised warrants further investigation as research indicates that preferred music may provide therapeutic benefits. Combining these factors, this project aims to develop a rehabilitation game system, using the beat of preferred music to drive game play and user movement.

Method: A prototype game system has been developed which incorporates RAC, using the beat of user selected music as the rhythmic stimulus. The user interacts with the system through a motion capture camera.

Results: The system can adapt to a user's range and rate of motion, constraining game play movements to safe boundaries and automatically selecting music of appropriate tempo for each user's motor function. To assess user performance, the system can output data which describes the movement of each upper limb joint. These data can be analysed to measure factors such as synchronisation to rhythm, trajectory, position, velocity and acceleration.

Discussion: Consultation with medical professionals will guide further system development. Additionally, the system will be developed to provide full upper limb monitoring and provide user feedback in real time.

Conclusion: Preliminary evaluation of output data demonstrates the potential of the system to act as a powerful analytical tool. Such data can be used by a health professional over successive sessions to assess if motor function is improving through repeated engagement.

References: [1] Thaut, M.H., Kenyon, G.P., Hurt, C.P., McIntosh, G.C. and Hoemberg, V., 2002. Kinematic optimization of spatiotemporal patterns in paretic arm training with stroke patients. Neuropsychologia, 40(7), pp.1073-1081.

4: A Highland Fling: Delivering Intensive Aphasia Therapy

Authors and Institutional Affiliations:
Cameron, N., Dickinson, N., Fusi, R., Hewitt, S. Speech and Language Therapy Team, Inverness & Caithness; NHS Highland & Highland Council

Background: Research has demonstrated positive outcomes for the provision of Speech and Language Therapy (SLT) in an intensive therapy block, as an alternative to traditional methods of providing therapy in weekly individual/ group sessions. Research has explored outcomes for individuals with a range of communication needs, including Dysarthria and Aphasia. This project set out to explore whether an intensive therapy model would be beneficial for individuals with post-stroke aphasia within our service.

Method: Three male participants completed an intensive block of SLT consisting of four one hour sessions a week over four weeks. All participants were approximately three years post-stroke and presented with expressive Aphasia and mild receptive difficulties. Participants were involved in selecting functionally relevant vocabulary to target in either speech or writing. Sessions were shared among SLTs and 'NHS Near Me' was used to carry out some sessions remotely with one participant.

Results: Data analysis is in progress. Scores show significantly improved production of targets. The therapy block allowed for quick progress which improved participants' confidence. Participants reported improved motivation, independence and quality of life such as, joining social groups and visiting the bank.

Discussion: Intensive Aphasia therapy, using person-centred vocabulary and targets, is an efficient, effective and sustainable model of delivery. Qualitative and quantitative outcomes were positive. A rural home location is not a barrier to intensive therapy. Time-focussed treatment, shared with colleagues, increases motivation and focus for participants and therapists whilst reducing reliance on a single SLT. Further monitoring of the three participants would be helpful to assess longer term benefits. Further research, to compare models of service delivery is required.

Conclusion: These initial results show positive outcomes for the intensive therapy model for individuals who have post-stroke Aphasia. The principle of intensive input may be transferrable to other Allied Health Professions.

5: Raising competence and confidence in delivering therapeutic interventions

Authors:
Cathy Cheyne and Jacqueline Pentland, Edinburgh Community Stroke Service, Edinburgh Health and Social Care Partnership.

Background: Following discharge from acute services, how do we ensure that service users who need it continue to receive specialist interventions from a competent community team? Edinburgh Community Stroke Service (ECSS) provides specialist multidisciplinary rehabilitation from a small team of therapists, with 17 Support Workers facilitating a variety of therapeutic tasks. Support Worker training has included online stroke specific resources and shadowing opportunities, however they reported a lack of confidence to facilitate some tasks and identified the need for a structured framework to support skill acquisition. The support team requested greater opportunities to practise and consolidate their skills and written clarification on delegated tasks.

Method: In September 2018 process mapping and team engagement identified 'education and training' as a key change idea. Support Workers completed a self-rated competence scale to establish a baseline.The therapy team explored whether a pre-existing competency framework could be used however there is no suitable resource for Support Workers within a specialist stroke service. Consequently, a programme was developed providing education, practise and demonstration of skills. Therapists created a checklist of what was required to support a client and training was delivered in small groups. Five new members of the Support Worker team trialled this programme with one therapeutic task – facilitating clients in an exercise group.

Results: The structured model was well received and staff rated an increase in competence to work independently with clients. Training was then cascaded to the wider team.

Discussion: The Stroke Improvement Plan (2014) prioritises the development of a skilled and knowledgeable workforce. The ECSS competence framework delivers on this priority area and we are investigating the use of the Scot toolkit to evidence learning.

Conclusion: Investing in the staff experience with team wide engagement can provide greater ownership of development and is known to improve service user's experience.

6: Activity Tracker Use in Community Stroke Rehabilitation

Authors:
Cathy Cheyne, Gill Murray, Leigh Fawcett; Edinburgh Community Stroke Service, NHS Lothian

Background: Patients attending Edinburgh Community Stroke Service (ECSS) frequently report low activity levels. This project aimed to increase physical activity in ambulant patients receiving post stroke physiotherapy with the use of free activity tracker technology. The longer term aim was to encourage sustained self-management of physical activity following discharge.

Method: Patients attending ECSS between November 2016 and May 2017 who were independently mobile, with or without a walking aid and who identified increasing physical activity as a rehabilitation goal were invited to participate. Physiotherapists established patient's baseline physical activity level. Patients were then provided with a Garmin Vivofit or Fitbit Flex Activity Tracker to wear daily. Weekly step count data was reviewed with the patients at each attendance and activity targets were set for the following week dependant on their rehabilitation goals.

Results: Seventeen patients trialled an activity tracker for between 2 to 19 weeks. All patients demonstrated a variable step count pattern with 7 patients demonstrating a sustained increase in average daily step count. For patients that demonstrated an improvement in physical activity, increased step count ranged from 778 to 4508 steps per day. Four patients sought to purchase their own personal fitness tracker at time of discharge.

Discussion: Not all participants increased their activity levels while attending ECSS. Stroke impairment is frequently multi-factorial impacting on ability to engage in activity. Activity trackers can be a useful adjunct for community stroke rehabilitation to demonstrate current physical activity level and increase awareness of the importance of healthy active lifestyles within long term condition management.

Conclusion: The use of activity trackers was not initiated as a 'one size fits all' solution to promoting an increase in activity however, it appeared to motivate some patients to focus on their activity levels and they successfully demonstrated an increase at time of discharge.

7: An evaluation of the use of the allied health professions advisory fitness for work report with patients with a neurological condition

Author:
Jemma Eagle, Fife Rehabilitation Service, Cameron Hospital

Background: Fife Rehabilitation Service (FRS) Occupational Therapy department supports patients with neurological conditions to achieve person centred functional goals, often with work related outcomes. The Allied Health Professions Fitness for Work Report (AHP FFWR) was developed in 2011/2012 by three professional bodies (CSP, RCOT and SCP) in consultation with the Department of Health and Department for Work and Pensions. A review of service provision within FRS highlighted that vocational reports were detailed, time consuming and complex and the AHPFFWR was adopted as part of wider service development. A PDSA was completed to ascertain the relative merits of the AHP FFWR and to establish whether efficiencies had been made within the OT department.

Method: Statistics collected over a three year period were analysed to identify patients who had indicated returning to/remaining at work as their rehabilitation goal. A coding system was then developed to establish the individual's work outcome and whether or not an AHP FFWR was issued, where this was not issued reasons were documented. Individual therapists coded the outcome which was collated by the lead author.

Results: The results show an increase in the use of the AHP FFWR. In 2016 3.5% of all patients with a vocational goal were provided with an AHP FFWR compared to 45% in 2018.

Discussion: Clinicians report that the AHP FFWR is beneficial, easy to complete and efficient' however, there remains a need for more detailed reports for complex patients. Patients have reported that they have found the report beneficial in facilitating conversations regarding work with their employers.

Use of the AHP FFWR has increased by 41.5% within the FRS OT department over the last 3 years. Feedback from both therapists and patients has found it to be a beneficial change leading to an autonomous vocational rehabilitation process which actively facilitates the services ethos of self management.

8: Implementation of the International Dysphagia Diet Standardisation Initiative (IDDSI) in NHS Grampian

Author:
June Gray, NHS Grampian

Background: The International Dysphagia Diet Standardisation Initiative (IDDSI) was published in 2015 with the goal of developing new global standardised terminology and definitions to describe texture modified foods and thickened liquids. All UK health boards to implement IDDSI by April 2019.

Project aims:.

- To coordinate the safe and effective local implementation of IDDSI throughout Grampian
- To produce and distribute new resources to support awareness and compliance
- To develop and deliver standardized training to all staff across Grampian
- To ensure all aspects of catering are in line with IDDSI

Methodology:

- Establish regular MDT working group meetings including Dietitians, Speech & Language Therapists, Nursing and Catering staff
- Work in partnership with food/thickener providers to develop resources and deliver training
- Resources produced included Briefing paper, Posters, Pocket reference cards and updated Texture Modified Food Handbook
- Information provided electronically, face to face and in written format
  Training sessions tailored specifically to different professional groups

Results:

- Raised awareness of dysphagia management.
- All staff have knowledge and resources to implement the IDDSI Framework
- 6 month audit following implementation of IDDSI.

Discussion:

- Ongoing process to investigate and audit if patients in hospital and community are being provided with the correct food and fluids in accordance with the new guidelines
- Appears to have been a smoother transition than anticipated but still some on-going discrepancies between old fluid descriptors and ‘mapping ‘over to the new fluid
- IDDSI’s late release of their available resources means all current NHSG information will need to be reviewed
- Difficulties with provision of levels 3 and 6. Data collection to evidence need continues.

Conclusion:

- Benefits of collaborative MDT working supported smooth transition of IDDSI across Grampian.
- NHSG now compliant with standardised terminology of food and fluid texture modification used across UK and other countries who have endorsed it.
- All staff have found it easy to follow and interpret but there may be patient safety issues in providing some of the levels due to practical difficulties at kitchen /ward level.

9: Responsiveness of the ARAT: differences between multiple time periods

Authors:
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Background: Stroke is a major health problem and a significant group of patients will experience upper limb hemiparesis. The Action Research Arm Test (ARAT) is the recommended tool to assess and identify changes in upper limb function during rehabilitation. Relevant literature did not include a representative sample and did not look at the difference in responsiveness to change between two treatment groups, receiving treatment at two different time points.

Aim: To compare the responsiveness to change of the ARAT in acute stroke patients between the early treatment group and the late treatment group.

Method: We used a secondary analysis based on a feasibility RCT that compared the responsiveness to change for the ARAT in two different treatment groups. Participants were divided over an early-, late- and usual-care treatment group. Augmented upper limb physiotherapy combined with normal upper limb physiotherapy was provided three weeks post stroke in the early group and compared with the same treatment nine weeks post stroke in the late group. The ARAT was conducted prior and post treatment. Responsiveness to change was expressed as the Standardised Response Mean (SRM).

Results: 61 participants were recruited of whom 27 were included in this analysis omitting the usual care group. The interquartile range of ARAT scores was between 3 and 57 for the early group and between 3.5 and 57 for the late group. The SRM score for the early group (N=11) was 0.72, whereas this was 0.76 for the late group (N=16).

Discussion and conclusions: The results suggest a moderate to large responsiveness to change in the early treatment group and a small to moderate responsiveness to change in the late treatment group. However, the findings indicate the need for a measure of responsiveness that is appropriate for skewed data.

10: Setting up a community physiotherapy rehab group for patients with a neurological condition

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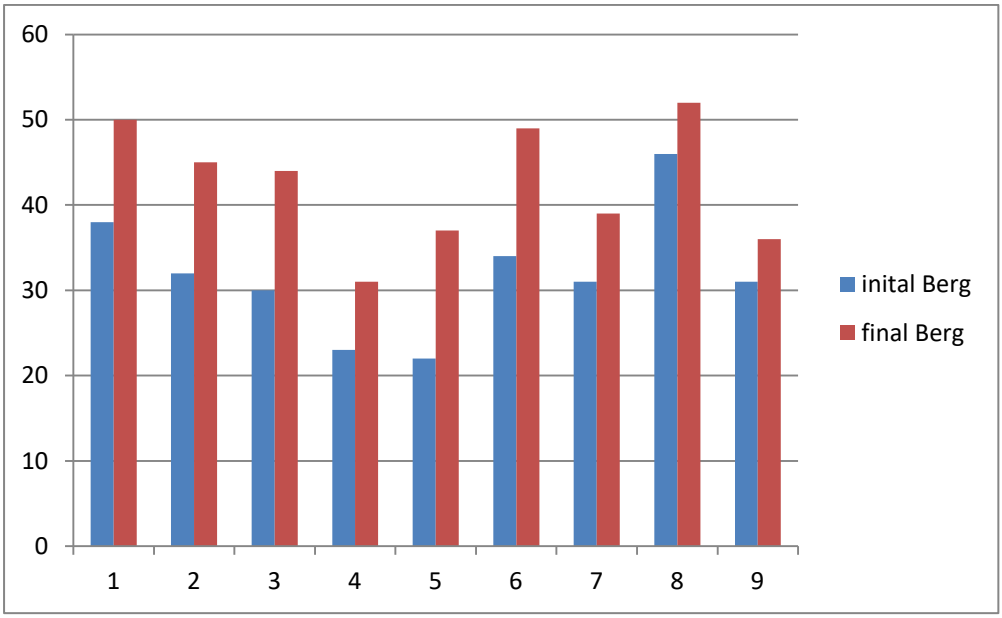
Institutional Affiliation of the Authors:
NHS Highland

Background: "Adults with neurological conditions have low levels of participation in physical activities, perceive themselves as isolated and have high rates of secondary complications from inactivity" (Elsworth et al 2010). As there was no suitable group locally, we decided to form a group to provide appropriate exercises and information. It was hoped that a block of input with specialist staff to help individuals increase their activity levels, balance, confidence and knowledge might encourage those individuals to continue exercising.

Method: We set eligibility criteria. Up to six patients attended each of the 3 groups. The group met once a week for 8 weeks in the hospital gym with 1 physiotherapist and 1 physiotherapy assistant for 1 hour. The session consisted of a warm up, 7 exercise stations which were completed as a circuit and then a cool down. There was also opportunity to discuss and receive written information around certain aspects of a condition and topics relating to health and activity promotion. Outcome measures were completed prior to starting the sessions and then again at the end. A telephone call was then made 1 month after the group had finished.

Results: The following chart shows that the 9 individuals that completed the sessions had an improved Berg Balance score indicating an improvement in their balance:



Five of the participants had met their goal by the end of the 8 weeks.

In addition, positive feedback has been received from all participants with quotes including "the sessions provided me with the incentive to keep going", "the choice of exercises suited our ability" and "camaraderie was most helpful".

Conclusion:

The group provided adults with neurological conditions the opportunity to participate in weekly exercise sessions for 8 weeks.

Through exercising, improvements were gained in:

a) Balance

b) Mobility

c) Functional ability

d) Confidence to exercise and continue exercising

References:

Elsworth et al, Supported community exercise in people with long term neurological conditions: a phase II randomised controlled trial, Clinical Rehabilitation, 2011, 25(7), 588-598.

11: Increasing activity and reducing sedentary behaviour within the Glasgow Stroke In-Patient Setting

Author:
Christine Meek

Institutional affiliation of the author

Working Group
June Lawrie, Rosslyn Scott, Jennifer Wales, Aline Ferns, Morag Clifford, Patricia Creelman, Jacqui Martin, Ben Addison, Gillian McLean, Claire Bookless, Emma Taylor, Shona Mackie, Susan Toye, Kate Boag, Caroline Arshad
Physiotherapist, NHS Greater Glasgow and Clyde

Background: Sedentary behaviour is a key issue post stroke and "Physical activity for fitness post stroke" is a key recommendation within guidelines (RCP 2014.) Glasgow's Stroke Inpatient Physiotherapy team considered that current physical activity levels were poor within the Glasgow Stroke in-patient setting.

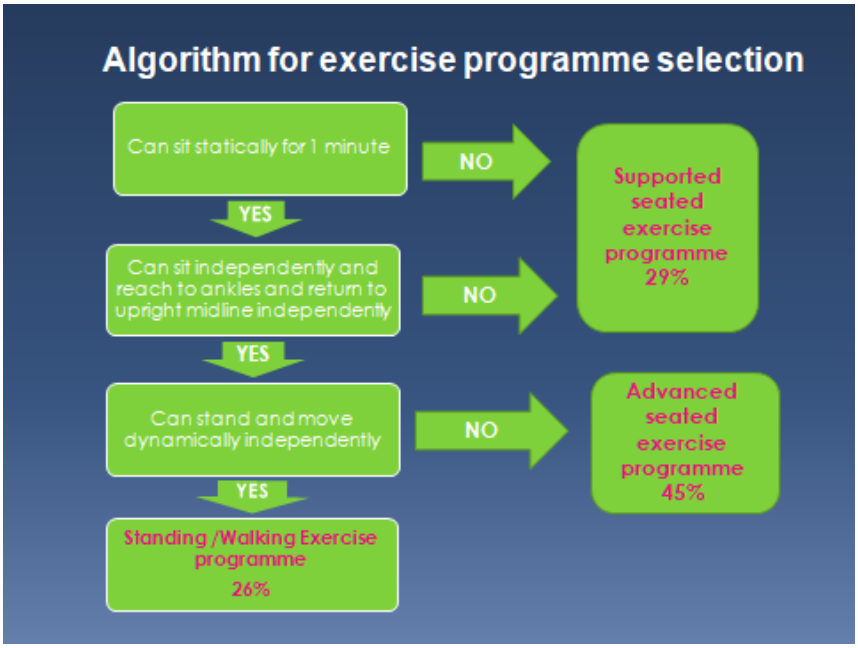
The key aims of the project were to:

- Establish current patient activity levels.

- Increase the frequency and duration of physical activity in Glasgow stroke rehabilitation unit inpatients to a minimum cumulative 30 minutes of activity each day through the development of functionally stratified self-administered 10 min exercise programmes.

Method: A 24hr audit of patient activity across the 6 stroke sites in Glasgow was collated from each patient's care rounding documentation. This pro-forma documents the patient's movements throughout the day together with toileting, eating and drinking. It is predominantly completed by nursing.

Functionally stratified self administered 10 min exercise programmes were developed (Fig 1) that patients completed in addition to their formal physiotherapy session. A feasibility pilot of the programmes with 30 patients was undertaken to identify if content, level and format of programmes was suitable for patients.



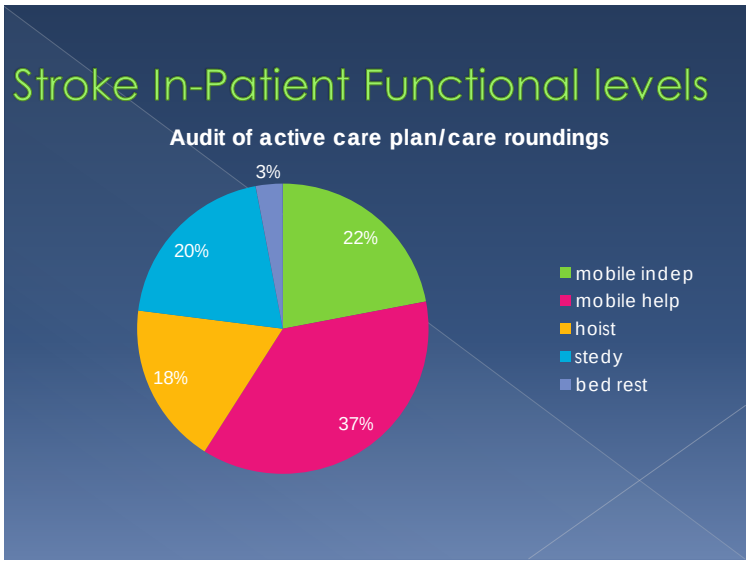
(Fig 1)

Results:

Table 1: Functional levels and activity levels over 24 hrs

Patients Functional level	**Average number of times walked or stood in 24 hrs**
Walks with assistance (37% of patient population.)	3 x
Walks independently (22% of patient population)	4 x
Stands with stedy (20%) of patient population)	3 x

These results are in-line with published data exploring activity levels in stroke units (Bernhardt). Audit of the patient's functional levels highlighted that 78% of our patients needed help to move or stand.



Discussion: Our findings support existing evidence that sedentary behaviour and low levels of physical activity are a key issue within the stroke in-patient setting (Bernhardt 2008). The stroke population that we rehabilitate faces the further challenge that a high percentage 78% (June 2018) cannot get up and move independently to combat this. Patients across the 3 functional stratifications could undertake 10min programmes independently, successfully utilising both digital and paper formats.

Conclusion: Consistent implementation of self administered functionally stratified exercise programmes could be an effective approach in reducing sedentary behaviour and increasing physical activity within the in-patent setting. Further work should explore carer involvement and the optimum format, intensity and stratification of these programmes to achieve favourable changes in activity levels

12: Upper limb therapy for stroke survivors with severely-limited arm function: an analysis of participants' function and goal attainment following an augmented intervention

Authors:
H Jane Young, Frederike van Wijck (both Glasgow Caledonian University)

Background: Guidelines stating that all stroke survivors with potential arm movement should receive upper limb therapy are based mostly on studies of stroke survivors with mild/moderately- limited arm function, and focus on task-specific training. It is not known whether stroke survivors with severely-limited arm function can participate in this type of therapy.

Methods: *Design:* Secondary analysis of group-data from a single-blinded RCT (EVERLAP: Early VERsus Later Augmented Physiotherapy after stroke). Outcome assessments were undertaken pre-and post-intervention (nine and 16 weeks post-stroke). EVERLAP studied the feasibility of delivering an upper limb intervention to stroke survivors with any limitation of arm function starting at two time points after stroke: "early" (3 weeks) and "later" (9 weeks). *Participants:* Stroke survivors scoring ≤3 on the Action Research Arm Test (ARAT), who received an upper limb therapy intervention at nine weeks post-stroke.
Intervention: Twenty seven hours (six weeks) of evidence-based physiotherapy ("augmented therapy"). Participants also received usual care physiotherapy and occupational therapy (UC). *Outcome Measures:* Primary: ARAT; secondary: Canadian Occupational Performance Measure (COPM).

Results: Of the 61 participants recruited, four were eligible for this analysis. The content of UC and augmented therapy was similar. Fifty-four percent of the total therapy duration was spent on interventions with a passive focus. Median [IQR] change for ARAT from pre-to post-intervention: 0 [0.00, 2.25]; for COPM "Performance": -1.15 [-1.48, -0.20], for "Satisfaction" -0.40 [-1.30, 3.80].

Discussion: A six-week augmented upper limb therapy intervention based on published guidelines was not feasible for stroke survivors with severely-limited arm function. Usual care and augmented therapy was characterised by the use of passive interventions. There was a negligible change in outcome measures of arm function and goal-attainment following the augmented intervention.

Conclusion: Further research is required to develop effective interventions to enable stroke survivors with severely-limited arm function to meet their personal goals.

13: Increasing patient activity on a stroke unit: something for everyone

Authors:
Fiona Johnson, Ros Todd, Lesley Morrow, Sara Keir, NHS Lothian

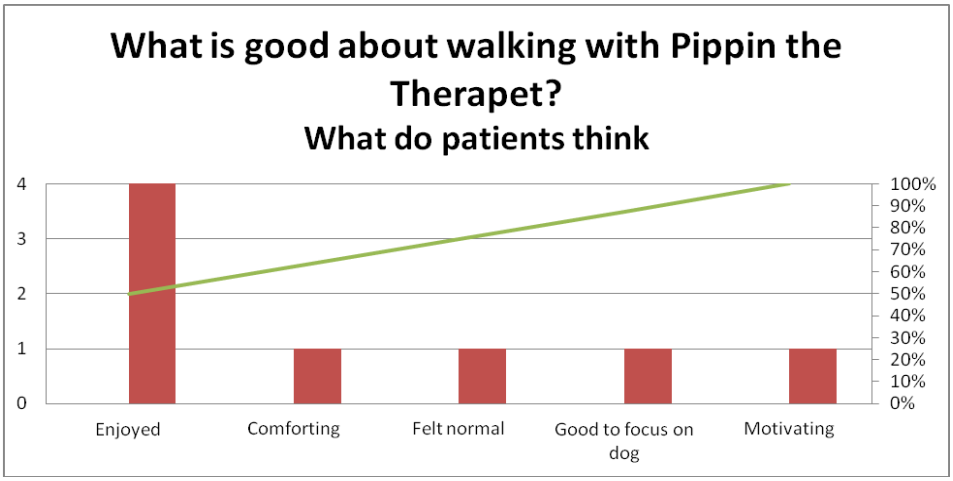
Background: Physical rehabilitation is only delivered during the working day and patients can spend long periods of inactivity on the ward between sessions. This could be due to a variety of reasons; lack of confidence in an unfamiliar environment, fatigue or concern about moving outside of a structured rehabilitation session. There is not much to encourage patients to move about outside of these sessions. Our project aimed to find innovative ways to increase patients' physical activity.

Method: We made use of 2 existing resources available on the ward that were inconsistently used: Pippin the Therapet and a Motomed seated bicycle.
We identified suitable patients for each of the activities and created virtual goals for each activity. Cyclists took part in the 'Tour de Western' (Western General Hospital), as the Tour de France was on at the time.
For walkers, the goal was to collectively walk a route equal to the distance around the local landmark of 'Arthurs Seat.'
The distances both cycled and walked were recorded and visually represented on maps on the wall on the ward.
Patients and staff were asked for their opinions on the activities. The aim of this project was to maintain the fitness of patients and potentially allow them to return home earlier.

Results: A total of 68 people took part – 19 in the seated cycle, most of whom could not walk –and a total of 49 people walked with the Therapet.Using the seated cycle, 211km were covered by this group and Pippin was walked 6.5km over the period of the project.None of this activity would have occurred otherwise.Some of the qualitative analysis is represented in figure 1.

Discussion: As well as improving rates of physical activity on the ward, we were both surprised and pleased to note the self-reported and observed improvements in the wellbeing of all those patients who took part. There were noticeable improvements in participation, engagement, focus and willingness to communicate.

Figure 1.


What is good about walking with Pippin the Therapet?
What do patients think
4
3
2
1
0
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Enjoyed
Comforting
Felt normal
Good to focus on dog
Motivating

14: Introducing Constraint induced Movement Therapy to Ayrshire and Arran Stroke and Neurological Services

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Background: Our team wanted to find evidence based treatment for management of upper limb rehabilitation for patients who have had a neurological event. Research led us to Constraint Induced Movement Therapy (CIMT), which is a rehabilitation treatment used to increase functional use of the affected upper limb through repeated use while restraining the unaffected upper limb. CIMT has been used in studies with patients with neurological patients for some years and it is now a recommended intervention by Royal College of Physicians in current National Clinical Guideline Stroke Management 2016.

Method: A one day training course in CIMT was held within Ayrshire for both occupational therapy and physiotherapy staff. A working group was then established to look at implementing CIMT into current practice within current resources. This then resulted in:

- Resource pack for clinicians developed (adapted from NHS Lanarkshire)
- Funding for a number of mitts secured
- Activity box developed for use during treatment programs

Inclusion criteria included: patients with an upper limb hemiplegia with some movement (20 degrees of active wrist extension and 10 degrees of active finger extension) but are not using it in day to day activities and can participate fully and safely in the program. Patients who met the criteria for the program underwent a 2 week individual program and attended the centre as an outpatient 3 times each week during the program with the lead therapist having peer support from colleagues as required.

Results: Since January 2018 13 patients have been offered the CIMT and 10 have started and completed it (one in-patient and 9 out-patients). All patients had a stroke diagnosis, ranging from 8 weeks to 1 year post stroke, and have completed the 2 week program. We have only collated data on patients who have participated in CIMT.

All patients recording improvement in pre CIMT and post CIMT scores in ArMA and 9 hole peg test with only one patient not able to fully complete the 9 hole peg test both pre and post CIMT. The biggest changes noted post CIMT in the ArMa is a postive score difference of 32 and with the 9 hole peg test 160 seconds quicker, these were recorded by different patients. All participants have completed a post CIMT questionnaire reporting physical and psychological benefits.

Discussion: The results from the 10 participants have all been positive and we have now introduced this as an intervention and will review the results again in 1 year time.

Conclusion: After initial cost of training and purchase of mitts the treatment is offered within current resources. This has been a positive experience for staff and patients and CIMT has changed our practice.

References: National Clinical Guideline Stroke Management 2016