UNIVERSITY OF LEEDS

What works for supporting life after stroke?

Mapping the evidence base for life after stroke: a research perspective

Amanda Farrin
Professor of Clinical Trials and Evaluation of Complex Interventions
University of Leeds, UK

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

UKCRC Registered Clinical Trials Units

ctru University of Leeds
EST. 1992 THE CLINICAL TRIALS RESEARCH UNIT

Disclosure Statement

UNIVERSITY OF LEEDS

No conflicts of interest to declare

NIHR disclaimer: This study/project is funded by the NIHR HTA Acceleration Award – platform studies programme (NIHR 156616)/HTA.

The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Acknowledgements

UNIVERSITY OF LEEDS

University of Leeds Project team

Anne Forster (co-lead)

Florence Day, Stephanie Evans, **John Green**, Alice Hankin, **Lauren Moreau**, Geraldine Murden, Holly Schofield, **Alex Wright-Hughes**

Patient, Carers & Public Involvement Group

Margaret Cheng, Joanne Hings, Martin Hings, Robert Field, Devender Jandu, Chris McKevitt, Tim Myers, John Murray, Stuart Sleight, Judith Thomas

Different Strokes local groups

Collaborators

Manchester: Audrey Bowen / Cambridge: Jonathan Mant / Edinburgh: Gillian Mead / Glasgow: Lisa Kidd & Terry Quinn / Newcastle: Chris Price & Lisa Shaw / Nottingham: Avril Drummond, Kate Radford & Cath Sackley / Sheffield: Rebecca Palmer / Bradford: Jen Airlie, Louisa Burton, Tom Crocker & Jess Johannsson Leeds: Rebecca Bestwick, Chris Bojke & Bethan Copsey / The Stroke Association: Richard Francis

FUNDED BY

NIHR | National Institute for Health and Care Research

ctru University of Leeds

ASR Academic Unit for Ageing and Stroke Research

Geoffrey Jefferson Brain Research Centre

MCHP Manchester Centre for Health Psychology

LEAP Life after Stroke Platform

Outline

UNIVERSITY OF LEEDS

Need for better life after stroke evidence

Effectiveness of interventions for life after stroke

Addressing challenges in the evidence base for life after stroke

Areas for future life after stroke research

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Need for better life after stroke evidence

Effectiveness of interventions for life after stroke

Addressing challenges in the evidence base for life after stroke

Areas for future life after stroke research

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

CLINICAL AND POPULATION SCIENCES

Burden of Stroke in Europe

Thirty-Year Projections of Incidence, Prevalence, Deaths, and Disability-Adjusted Life Years

Hatem A. Wafa, MPH*; Charles D.A. Wolfe, MD; Eva Emmett, MPH; Gregory A. Roth, MD; Catherine O. Johnson, PhD; Yanzhong Wang, PhD

BACKGROUND AND PURPOSE: Prediction of stroke impact provides essential information for healthcare planning and priority setting. We aim to estimate 30-year projections of stroke epidemiology in the European Union using multiple modeling approaches.

METHODS: Data on stroke incidence, prevalence, deaths, and disability-adjusted life years in the European Union between 1990 and 2017 were obtained from the global burden of disease study. Their trends over time were modeled using 3 modeling strategies: linear, Poisson, and exponential regressions—adjusted for the gross domestic product per capita, which reflects the impact of economic development on health status. We used the Akaike information criterion for model selection. The 30-year projections up to 2047 were estimated using the best fitting models, with inputs on population projections from the United Nations and gross domestic product per capita prospects from the World Bank. The technique was applied separately by age-sex-country groups for each stroke measure.

RESULTS: In 2017, there were 1.12 million incident strokes in the European Union, 9.53 million stroke survivors, 0.46 million deaths, and 7.06 million disability-adjusted life years lost because of stroke. By 2047, we estimated an additional 40 000 incident strokes (+3%) and 2.58 million prevalent cases (+27%). Conversely, 80 000 fewer deaths (−17%) and 2.31 million fewer disability-adjusted life years lost (−33%) are projected. The largest increase in the age-adjusted incidence and prevalence rates are expected in Lithuania (average annual percentage change, 0.48% and 0.7% respectively), and the greatest reductions in Portugal (−1.57% and −1.3%). Average annual percentage change in mortality rates will range from −2.86% (Estonia) to −0.08% (Lithuania), and disability-adjusted life years' from −2.77% (Estonia) to −0.23% (Romania).

CONCLUSIONS: The number of people living with stroke is estimated to increase by 27% between 2017 and 2047 in the European Union, mainly because of population ageing and improved survival rates. Variations are expected to persist between countries showing opportunities for improvements in prevention and case management particularly in Eastern Europe.

Key Words: global burden of disease ■ health status ■ incidence ■ prevalence ■ stroke

Key messages

In 2017

- 1.12 million people had a stroke
- 0.5 million deaths
- 9.53 stroke survivors

By 2047

- ▲ Number of people having a stroke will increase by 3%
- ▼ Deaths will reduce by 17%
- ▲ **Number of stroke survivors will increase by 27%**

LEAP
Life after Stroke Platform

Evidence gap in ‘life after stroke’ pathway

UNIVERSITY OF LEEDS

Over 100,000 people have a stroke every year in the UK (SSNAP figures)

Better survival, rising incidence: more survive but do not thrive

Over 1.3 million with multiple long-term effects in the UK

Psychological & emotional problems, cognition, communication, fatigue, mobility, pain, participation in everyday & social activities …

75% respondents to a Stroke Association survey reported one or more mental health difficulty

Slow, inefficient evidence generation

Global calls for **more efficient stroke recovery research -** better understand multiple treatments and answer multiple questions in same study

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Lack of interventions that work for life after stroke problems

Too little research into long-term needs of stroke survivors & carers

- Severe lack of information, preparation and support for stroke survivors and carers
- Community-based rehabilitation therapies and support falling short of people's needs
- Secondary prevention advice support failing to help people reduce risk of another stroke
- Carers' needs under-researched & often ignored in service provision
- Many chronic symptoms not well understood - memory, concentration, fatigue, mental health

LEAP
Life after Stroke Platform

Priority setting for life after stroke research

UNIVERSITY OF LEEDS

LEAP
Life after Stroke Platform

Top 10 priorities

UNIVERSITY OF LEEDS

Rehabilitation and long-term care

1. **Mental and emotional (psychological) problems** can be caused by stroke/TIA.

   How common are psychological problems and what impact do they have on the lives of people affected by stroke (including the children of stroke survivors); what factors and interventions can best prevent psychological difficulties, support adjustment, and improve motivation, wellbeing and engagement; how cost-effective are these interventions and how can they be made available to people affected by stroke?

2. **Thinking and memory (cognitive) problems** can be caused by stroke.

   What is the best way to assess for and understand the impacts of these, and track progression in all areas of cognition – including using standardised measures – across the stroke pathway; what and how can interventions and services involving multidisciplinary teams and families be made accessible; and how can information on these problems be provided?

3. Stroke can affect **communication abilities**, such as reading, speaking and listening as well as social and related 'thinking' skills (cognitive communication disorder).

   What are the effects of, and best assessments and interventions* for, the range of communication difficulties in stroke survivors?

4. People with stroke/TIA* can experience **fatigue**.

   How common is fatigue; what and why are there various types, causes/triggers and experiences of its effects? What are the best ways to recognise, reduce, treat and self-manage fatigue – including in young stroke survivors and for all types of stroke, including subarachnoid haemorrhage* – to minimise the impact on recovery and life after stroke?

James Lind Alliance

Priority Setting Partnerships

LEAP

Life after Stroke Platform

Top 10 priorities

UNIVERSITY OF LEEDS

Rehabilitation and long-term care

5. How can **community stroke services** best be resourced and organised in all regions to provide effective home/community-based rehabilitation that meets the needs of all groups of stroke survivors such as ethnic groups, young people, stroke severities and those with multiple health conditions?

6. What and how common are the **long-term impacts of stroke on abilities necessary for everyday life**; what interventions* can be made available to facilitate these abilities, and how? For example, impact on and interventions including education, assessment, treatment and support for return to work, driving, relationships and financial wellbeing.

7. What is the best **time, place and amount of therapy** (eg speech and language therapy, physiotherapy, occupational therapy) to get the best outcomes* for stroke survivors, and is this different than advised in the Stroke Guidelines (5 times a week for 45 minutes)?

8. How can **people supporting stroke survivors work best with the stroke care team**, and what personalised training and support is available for carers to enable them to support stroke survivors and their recovery, including those with communication, cognitive and engagement difficulties? For example, the roles of family members, volunteers, stroke liaison workers and young carers.

9. What are the best interventions* including exercise to **improve strength and fitness, promote recovery and prevent further stroke** in stroke survivors?

10. What do stroke survivors think and feel works well, or needs improvement as they move through the stroke pathway, including the intensity of rehabilitation*? What can be done to improve the **stroke survivor and carer experiences**?

James Lind Alliance
Priority Setting Partnerships

LEAP
Life after Stroke Platform

Need for better life after stroke evidence

Effectiveness of interventions for life after stroke

Addressing challenges in the evidence base for life after stroke

Areas for future life after stroke research

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Reviewing the evidence: life after stroke interventions

UNIVERSITY OF LEEDS

Comprehensively searched for trials January 2015 - March 2023

1. Phase III RCTs undertaken outside the UK (N > 100)
2. Pilot or feasibility studies undertaken within the UK

Excluded: Not life after stroke (emergency / hyperacute / acute care)
Acupuncture; nerve stimulation; expensive kit (treadmill, robots, VR etc)

Medline
Cochrane Central
DORIS
ClinicalTrials.gov
International Clinical Trials Registry Platform

Also asked national & international researchers: any ongoing or completed studies?

Eligible studies screened, prioritised stroke rehab or long-term care interventions

- ✓ **Aligned with one or more of the top 10 priorities**
- ✓ **Individually randomised**
- ✓ **Showed efficacy or convincing proof of concept**
- ✓ **Deliverable in UK health or social care setting**

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Screened 213 papers/studies 116 RCTs non-UK / 97 feas UK

UNIVERSITY OF LEEDS

23 included studies	10 definitive RCTs 13 feasibility / pilot studies
5 deprioritised	3 definitive RCTs 2 feasibility • Cluster interventions
173 excluded	100 definitive RCTs 73 feasibility
12 kept under review Results not (yet) available	3 definitive RCTs • Australia (Aphasia) • NZ (Fatigue) • China (3-stage rehabilitation treatment) 9 feasibility

LEAP
Life after Stroke Platform

10 large randomised controlled trials

UNIVERSITY OF LEEDS

Country	Intervention target	Paper
USA	Caregiver skills Upper limb: video game Upper limb: Home tele-rehabilitation	**Bakas** *Stroke 2015* **Gauthier** *eClinMed 2021* **Cramer** *JAMA Neurol 20*
China	Lower limb: transcranial direct current stimulator & FES Home rehabilitation service	**Zhang** *Front. Neurosci 2021* **Feng** *Ann Palliat Med 2021*
Australia	Constraint-Induced Aphasia Therapy & Multimodality Aphasia Therapy	**Rose** *J Neurol Neurosurg Psych 2022*
Canada	Cognitive function (multicomponent exercise, cognitive & social enrichment)	**Liu-Ambrose** *JAMA Network Open* 2022
Iran	Family centred empowerment	**Izadi-Avanji** *Client-Cen Nurs Care 2020*
New Zealand	Take Charge: Person-centred self-directed rehabilitation	**Fu** *Stroke 2020*
Multi-national Canada, Argentina, Peru, Thailand	Upper limb: virtual reality rehabilitation	**Saposnik** *Lancet Neurol 2016*

LEAP
Life after Stroke Platform

Selecting strongest interventions

UNIVERSITY OF LEEDS

Definitive RCTs: Assess **strength of evidence** for each intervention

Is the treatment effect:

- plausible, convincing, important to patients and clinicians?
- maintained long-term, or just post-intervention?
- only for primary outcome or wider across multiple outcomes?
- for the whole sample or just a sub-group?

UK feasibility / pilot studies: Which are the **strongest** interventions?

- Is there strong proof-of-concept evidence to show this intervention is ready for trial testing?
- Are there obvious 'red flags': poor recruitment, Intervention delivery or follow-up?

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

New Zealand (Take Charge: person-centred self-directed rehab)

Research

International Journal of Stroke WSO

International Journal of Stroke
2020, Vol. 15(9) 954–964


Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/1747493020915144
journals.sagepub.com/home/wso
SAGE

Taking Charge after Stroke: A randomized controlled trial of a person-centered, self-directed rehabilitation intervention

Vivian Fu[1], Mark Weatherall[2], Kathryn McPherson[3], William Taylor[4], Anna McRae[5], Tom Thomson[6], John Gommans[7], Geoff Green[8], Matire Harwood[9], Annemarei Ranta[2], Carl Hanger[10], Judith Riley[1] and Harry McNaughton[1]

Abstract

Background and purpose: "Take Charge" is a novel, community-based self-directed rehabilitation intervention which helps a person with stroke take charge of their own recovery. In a previous randomized controlled trial, a single Take Charge session improved independence and health-related quality of life 12 months following stroke in Māori and Pacific New Zealanders. We tested the same intervention in three doses (zero, one, or two sessions) in a larger study and in a broader non-Māori and non-Pacific population with stroke. We aimed to confirm whether the Take Charge intervention improved quality of life at 12 months after stroke in a different population and whether two sessions were more effective than one.

UK feasibility or pilot studies

UNIVERSITY OF LEEDS

Post-stroke need	Intervention target
Anxiety / depression	• Behaviour activation • Cognitive behavioural therapy (tele) • Mindful music listening • Mindfulness-based stress reduction • Positive psychotherapy • Self-help relaxation
Psychological	• Group arts therapy
Aphasia	• Peer befriending • Solution focused brief therapy
Upper Limb	• Rehabilitation exercise • Wrist-worn device
Confidence	• Group-based intervention

Key message

Showed some promise but require large scale evaluation of effectiveness

LEAP
Life after Stroke Platform

Need for better life after stroke evidence

Effectiveness of interventions for life after stroke

Addressing challenge(s) in the evidence base for life after stroke

Areas for future life after stroke research

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

How do we measure what works?

UNIVERSITY OF LEEDS

No single Core Outcome Set for life after stroke research

Which outcomes are relevant to each intervention?

Frequency & timing

Validity and reliability of measures; statistical properties

Use routine data - where possible

How to minimise burden?

Allow tailored approaches to data collection

PPI: choose outcomes of importance and relevance to stroke survivors

FUNDED BY
NIHR | National Institute for Health and Care Research

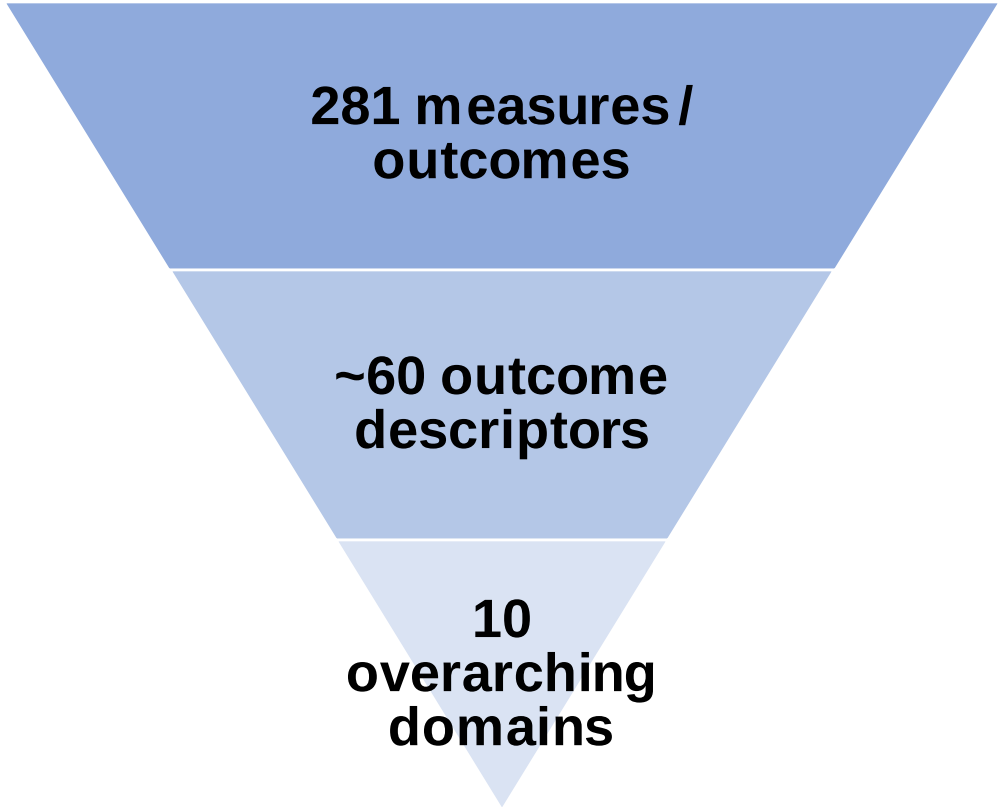
LEAP
Life after Stroke Platform

18 Cochrane reviews informing top 10 Priorities

UNIVERSITY OF LEEDS

Research priority	N reviews
1: Psychological problems	4
2: Cognition	3
3: Communication	0
4: Fatigue	2
5: Community stroke services	0
6: Everyday life	1
7: Time, place, amount of therapy	6
8: Carer support	0
9: Exercise interventions	2
10: Stroke survivor & carer experience	0
Other source (papers, databases)	*3**

Reviewed availability & relevance of Core Outcomes Sets & measures



FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

10 Outcome domains

UNIVERSITY OF LEEDS

Quality of life

Mood

(inc. General, Anxiety, Depression)

Activities / Extended Activities of Daily Living

(Inc. Social Activity, Driving)

Dependence / Independence / Disability

(Inc. Impairment, Institutional care)

Physical

(inc. Balance; Fatigue; Upper/lower limb - function, activity, impairment; Mobility; Physical function, fitness, ability; Walking and standing ability, capacity)

Cognition / memory / vision

(inc. Cognitive function; Memory - objective / subjective; Metacognition; Visual function; Attention – Alertness, Divided, Selective, global, Sustained)

Communication

(inc. Functional, impairment, ability)

Carer

(inc. mood, QoL)

Adverse events, safety

(inc. Death or a poor outcome, Vascular risk factors)

Other

(inc. Drop out, Adherence, Health service use, Participation restrictions, Satisfaction - intervention / services, Self efficacy)

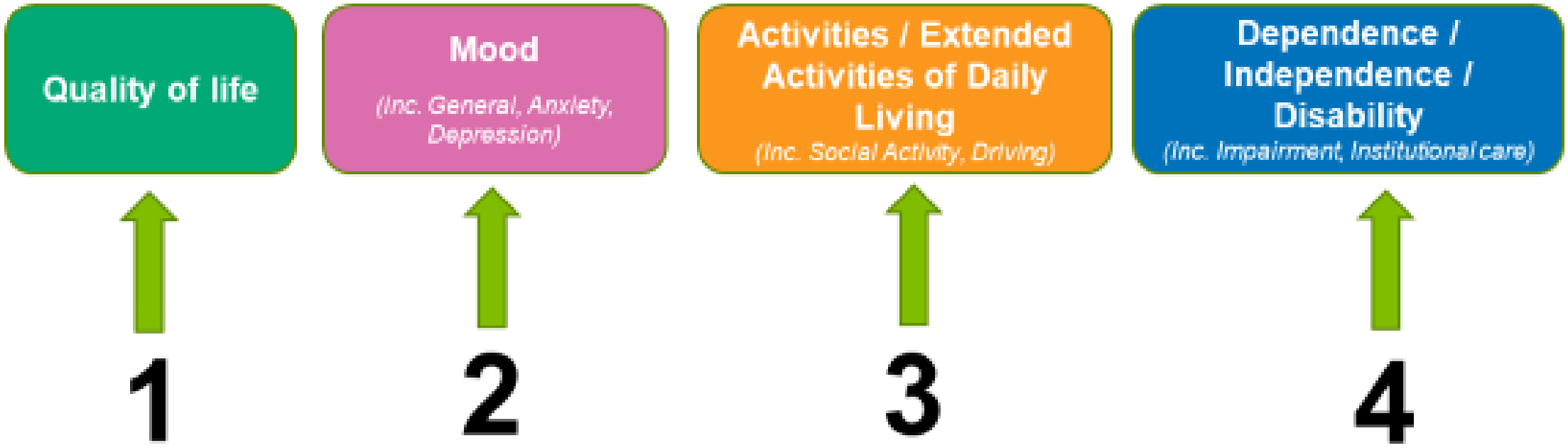
FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Stakeholder Ranking

UNIVERSITY OF LEEDS

Trust & willingness to implement trial decisions based on chosen measure



Highest scoring domains prioritised for primary outcome

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Need for better life after stroke evidence

Effectiveness of interventions for life after stroke

Addressing challenges in the evidence base for life after stroke

Areas for future life after stroke research

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Innovative, efficient, ambitious trials

UNIVERSITY OF LEEDS

Address highest **priority research questions**

Rigorously develop and test **strongest interventions**

- Align with research priorities
- Robust intervention development: feasible, acceptable, deliverable
- Convincing proof of concept / efficacy,

Efficient trial designs to test multiple interventions in a single study: fewer patients overall

Incorporate **adaptive design** elements: respond to emerging results & new evidence

Use **routine** healthcare system data: collect once, use often

Underpinned with inclusive Patient, Carer & Public Involvement

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

The way forward…

UNIVERSITY OF LEEDS

Efficient research through a platform trial approach

Minimise burden to stroke services & stroke survivors

Make best use of (scarce) research funding

Reduce research waste

Speed up generation of evidence

Accelerate translation of research into clinical practice

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Big leap forward …

UNIVERSITY OF LEEDS

Collaboration not competition

NIHR HTA call Platform studies of multiple interventions in areas of strategic importance

Multi-disciplinary alliance

to enable platform trials in UK …

Game-changing opportunity for life after stroke research

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

Thank you

a.j.farrin@leeds.ac.uk

FUNDED BY
NIHR | National Institute for Health and Care Research

ctru University of Leeds

LEAP
Life after Stroke Platform

Big leap forward …

UNIVERSITY OF LEEDS

Collaboration not competition

Multi-disciplinary alliance

to enable platform trials in UK …

… and Europe …

Game-changing opportunity for life after stroke research

FUNDED BY
NIHR | National Institute for Health and Care Research

LEAP
Life after Stroke Platform

USA: Carer intervention

Telephone Assessment and Skill-Building Kit for Stroke Caregivers

A Randomized Controlled Clinical Trial

Tamilyn Bakas, PhD, RN; Joan K. Austin, PhD, RN; Barbara Habermann, PhD, RN; Nenette M. Jessup, MPH, CCRP; Susan M. McLennon, PhD, RN; Pamela H. Mitchell, PhD, RN; Gwendolyn Morrison, PhD; Ziyi Yang, MS; Timothy E. Stump, MA; Michael T. Weaver, PhD, RN

Background and Purpose—There are few evidence-based programs for stroke family caregivers postdischarge. The purpose of this study was to evaluate efficacy of the Telephone Assessment and Skill-Building Kit (TASK II), a nurse-led intervention enabling caregivers to build skills based on assessment of their own needs.

Methods—A total of 254 stroke caregivers (primarily female TASK II/information, support, and referral 78.0%/78.6%; white 70.7%/72.1%; about half spouses 48.4%/46.6%) were randomized to the TASK II intervention (n=123) or to an information, support, and referral group (n=131). Both groups received 8 weekly telephone sessions, with a booster at 12 weeks. General linear models with repeated measures tested efficacy, controlling for patient hospital days and call minutes. Prespecified 8-week primary outcomes were depressive symptoms (with Patient Health Questionnaire Depressive Symptom Scale PHQ-9 ≥5), life changes, and unhealthy days.

Results—Among caregivers with baseline PHQ-9 ≥5, those randomized to the TASK II intervention had a greater reduction in depressive symptoms from baseline to 8, 24, and 52 weeks and greater improvement in life changes from baseline to 12 weeks compared with the information, support, and referral group ($P<0.05$); but not found for the total sample. Although not sustained at 12, 24, or 52 weeks, caregivers randomized to the TASK II intervention had a relatively greater reduction in unhealthy days from baseline to 8 weeks ($P<0.05$).

Conclusions—The TASK II intervention reduced depressive symptoms and improved life changes for caregivers with mild to severe depressive symptoms. The TASK II intervention reduced unhealthy days for the total sample, although not sustained over the long term.

Clinical Trial Registration—URL: https://www.clinicaltrials.gov. Unique identifier: NCT01275495.

(*Stroke*. 2015;46:3478-3487. DOI: 10.1161/STROKEAHA.115.011099.)

USA: Upper limb video game

Video game rehabilitation for outpatient stroke (VIGoROUS): A multi-site randomized controlled trial of in-home, self-managed, upper-extremity therapy

Lynne V. Gauthier,[a*] Deborah S. Nichols-Larsen,[b] Gitendra Uswatte,[c] Nancy Strahl,[d] Marie Simeo,[e] Rachel Proffitt,[f] Kristina Kelly,[g] Roger Crawfis,[h] Edward Taub,[c] David Morris,[i] Linda Pax Lowes,[j] Victor Mark,[k] and Alexandra Borstad[l]

[a]University of Massachusetts Lowell, Dept. Physical Therapy and Kinesiology
[b]The Ohio State University, School of Health and Rehabilitation Sciences
[c]University of Alabama Birmingham, Dept. of Psychology
[d]Providence Medford Medical Center
[e]OhioHealth Neurological Rehabilitation
[f]University of Missouri, Dept. of Occupational Therapy
[g]Ohio State University, Dept of Neurology
[h]Ohio State University, Dept of Computer Science
[i]University of Alabama Birmingham, Dept. of Physical Therapy
[j]Nationwide Children's Hospital
[k]University of Alabama Birmingham, Dept. of Physical Medicine and Rehabilitation
[l]College of St. Scholastica, Dept. of Physical Therapy

EClinicalMedicine
2021;43: 101239
Published online xxx
https://doi.org/10.1016/j.eclinm.2021.101239

Summary

Background Integrating behavioral intervention into motor rehabilitation is essential for improving paretic arm use in daily life. Demands on therapist time limit adoption of behavioral programs like Constraint-Induced Movement (CI) therapy, however. Self-managed motor practice could free therapist time for behavioral intervention, but there remains insufficient evidence of efficacy for a self-management approach.

Methods This completed, parallel, five-site, pragmatic, single-blind trial established the comparative effectiveness of using in-home gaming self-management as a vehicle to redirect valuable therapist time towards behavioral intervention. Community-dwelling adults with post-stroke (>6 months) mild/moderate upper extremity hemiparesis were randomized to receive one of 4 different interventions over a 3-week period: 5 h of behaviorally-focused intervention plus gaming self-management (Self-Gaming), the same with additional behaviorally-focused telerehabilitation (Tele-Gaming), 5 h of Traditional motor-focused rehabilitation, or 35 h of CI therapy. Primary outcomes assessed everyday arm use (Motor Activity Log Quality of Movement, MAL) and motor speed/function (Wolf Motor Function Test, WMFT) immediately before treatment, immediately after treatment, and 6 months later. Intent-to-treat analyses were implemented with linear mixed-effects models on data gathered from March 15, 2016 to November 21, 2019. ClinicalTrials.gov, NCT02631850.

USA: Home tele-rehabilitation

JAMA Neurology | Original Investigation

Efficacy of Home-Based Telerehabilitation vs In-Clinic Therapy for Adults After Stroke
A Randomized Clinical Trial

Steven C. Cramer, MD; Lucy Dodakian, MA, OTR/L; Vu Le, MS; Jill See, MPT; Renee Augsburger, OTR/L; Alison McKenzie, DPT, PhD; Robert J. Zhou, BA; Nina L. Chiu, BS; Jutta Heckhausen, PhD; Jessica M. Cassidy, DPT, PhD; Walt Scacchi, PhD; Megan Therese Smith, PhD; A. M. Barrett, MD; Jayme Knutson, PhD; Dylan Edwards, PhD, PT; David Putrino, PhD, PT; Kunal Agrawal, MD; Kenneth Ngo, MD; Elliot J. Roth, MD; David L. Tirschwell, MD; Michelle L. Woodbury, PhD, OTR/L; Ross Zafonte, DO; Wenle Zhao, PhD; Judith Spilker, BSN, RN; Steven L. Wolf, PT, PhD; Joseph P. Broderick, MD; Scott Janis, PhD; for the National Institutes of Health StrokeNet Telerehab Investigators

IMPORTANCE Many patients receive suboptimal rehabilitation therapy doses after stroke owing to limited access to therapists and difficulty with transportation, and their knowledge about stroke is often limited. Telehealth can potentially address these issues.

OBJECTIVES To determine whether treatment targeting arm movement delivered via a home-based telerehabilitation (TR) system has comparable efficacy with dose-matched, intensity-matched therapy delivered in a traditional in-clinic (IC) setting, and to examine whether this system has comparable efficacy for providing stroke education.

Author Audio Interview

Supplemental content

China: Home rehabilitation integrated service

Application effect of the hospital-community integrated service model in home rehabilitation of stroke in disabled elderly: a randomised trial

Weijiao Feng, Hui Yu, Jun Wang, Jingfang Xia

Department of Neurology, Affiliated Hospital of Jiangnan University, Wuxi, China

Contributions: (I) Conception and design: W Feng, J Xia; (II) Administrative support: J Xia; (III) Provision of study materials or patients: W Feng, H Yu, J Wang; (IV) Collection and assembly of data: W Feng, H Yu, J Wang; (V) Data analysis and interpretation: W Feng, H Yu; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Jingfang Xia. Department of Neurology, Affiliated hospital of Jiangnan University, No. 1000, Hefeng Road, Wuxi 214122, China. Email: 8586486O@qq.com.

Background: Disabled elderly with stroke usually have difficulty in obtaining professional rehabilitation intervention after being discharged from the hospital, and their self-health management ability is low, so their illness is prone to relapse. The hospital community-integrated service model (HCISM) is a scientific model designed to meet the needs of home care after discharge from the hospital, improve the quality of life of patients after discharge from the hospital, ease the burden on the family, and improve the service capabilities of community medical staff. The purpose of this study is to explore the effect of HCISM in home rehabilitation of stroke disabled elderly.

Methods: From September 2019 to September 2020, 120 the disabled elderly patients with stroke admitted to Affiliated hospital of Jiangnan University were selected and divided into two groups with a random number table method, with 60 cases in each group. Both groups underwent home rehabilitation after discharge, the control group was given routine intervention, and the observation group was given HCISM intervention. The changes of self-care ability, compliance behavior, self-efficacy, and adverse mood before and after intervention were compared between the two groups.

China: Lower limb transcranial direct current stimulator and Functional Electrical Stimulation

The Effect of Transcranial Direct Current Stimulation and Functional Electrical Stimulation on the Lower Limb Function of Stroke Patients

Xiao-Hua Zhang[1†], Tao Gu[1†], Xuan-Wei Liu[1], Ping Han[1], Hui-Lan Lv[1], Yu-Long Wang[2] and Peng Xiao[1*]*

[1] Department of Rehabilitation, Shenzhen Dapeng New District Nanao People's Hospital, Shenzhen, China, [2] Department of Rehabilitation, The First Affiliated Hospital, Shenzhen University, Shenzhen Second People's Hospital, Shenzhen, China

OPEN ACCESS

Edited by:
Waldemar Karwowski, University of Central Florida, United States

Reviewed by:
Deepak Kumbhare, Virginia Commonwealth University, United States
Ignacio Delgado Martinez, Hospital del Mar Medical Research Institute (IMIM), Spain

***Correspondence:**
Yu-Long Wang
wamgyulomg@21cn.com

Objective: This study aimed to research the effect of transcranial direct current stimulation (tDCS) and functional electrical stimulation (FES) on the lower limb function of post-convalescent stroke patients.

Methods: A total of 122 patients in the stroke recovery stage who suffered from leg dysfunction were randomly divided into two groups: a tDCS group (n = 61) and a FES group (n = 61). All patients received same routine rehabilitation and equal treatment quality, the tDCS group was treated with tDCS, while the FES group received FES. The lower limb Fugl-Meyer assessment (FMA), modified Barthel index (MBI), functional ambulatory category (FAC), and somatosensory evoked potential (SEP) were used to assess the patients at three different stages: prior to treatment, 4 weeks after treatment, and 8 weeks after treatment.

Australia: Constraint-Induced Aphasia Therapy & Multimodality Aphasia Therapy

OPEN ACCESS

Original research

Results of the COMPARE trial of Constraint-induced or Multimodality Aphasia Therapy compared with usual care in chronic post-stroke aphasia

Miranda L Rose [1,2] Lyndsey Nickels [3] David Copland [4,5] Leanne Togher [6] Erin Godecke [7] Marcus Meinzer [8] Tapan Rai [9] Dominique A Cadilhac [10] Joosup Kim [10] Melanie Hurley [2] Abby Foster [2,11] Marcella Carragher [2] Cassie Wilcox,[2] John E Pierce [2] Gillian Steel [2]

► Additional supplemental material is published online only. To view, please visit the journal online (http://dx.doi.org/10.1136/jnnp-2021-328422).

For numbered affiliations see end of article.

Correspondence to
Professor Miranda L Rose, Allied Health, Human Services and Sport, La Trobe University, Melbourne, Victoria, Australia; m.rose@latrobe.edu.au

Received 8 November 2021

ABSTRACT

Background While meta-analyses confirm treatment for chronic post-stroke aphasia is effective, a lack of comparative evidence for different interventions limits prescription accuracy. We investigated whether Constraint-Induced Aphasia Therapy Plus (CIAT-plus) and/or Multimodality Aphasia Therapy (M-MAT) provided greater therapeutic benefit compared with usual community care and were differentially effective according to baseline aphasia severity.

Methods We conducted a three-arm, multicentre, parallel group, open-label, blinded endpoint, phase III, randomised-controlled trial. We stratified eligible participants by baseline aphasia on the Western Aphasia Battery-Revised Aphasia Quotient (WAB-R-AQ). Groups

Key messages

What is already known on this topic

⇒ Previous evidence for constraint-induced aphasia therapy (CIAT-Plus) and Multimodality Aphasia Therapy (M-MAT) is limited by small sample sizes, inadequate comparator groups, and recruitment and detection bias.

What this study adds

⇒ This large-scale, phase III trial confirmed the efficacy of an intensive dose of CIAT Plus and M-MAT with clinically meaningful effects on word retrieval, functional communication and quality of life.

Canada: Cognitive function (multicomponent exercise, cognitive & social enrichment)

JAMA Network Open

Original Investigation | Neurology

Effect of Exercise Training or Complex Mental and Social Activities on Cognitive Function in Adults With Chronic Stroke
A Randomized Clinical Trial

Teresa Liu-Ambrose, PhD, PT; Ryan S. Falck, PhD; Elizabeth Dao, PhD; John R. Best, PhD; Jennifer C. Davis, PhD; Kim Bennett, MSc; Peter A. Hall, PhD; Ging-Yuek Robin Hsiung, MD; Laura E. Middleton, PhD; Charles H. Goldsmith, PhD; Peter Graf, PhD; Janice J. Eng, PhD

Abstract

IMPORTANCE A stroke doubles one's risk for dementia. How to promote cognitive function among persons with chronic stroke is unclear.

OBJECTIVE To evaluate the effect of exercise (EX) or cognitive and social enrichment activities (ENRICH) on cognitive function in adults with chronic stroke.

DESIGN, SETTING, AND PARTICIPANTS This was a 3-group parallel, single-blinded, single-site, proof-of-concept randomized clinical trial at a research center in Vancouver, British Columbia, Canada. Participants included community-dwelling adults with chronic stroke, aged 55 years and older, able to walk 6 meters, and without dementia. The trial included a 6-month intervention and a

Key Points

Question What is the effect of exercise or cognitive and social enrichment activities on cognitive function in adults with chronic stroke?

Findings In this randomized clinical trial with 120 participants, compared with control, exercise significantly improved cognitive function. The degree of improvement observed in the exercise group was clinically meaningful.

Iran: Family centred empowerment model

The Effect of a Family-centered Empowerment Model on the Quality of Life of Patients With Stroke

Fateme Sadat Izadi-Avanji[1], Alireza Amini[2], Neda Mirbagh Ajorpaz[2*], Hossein Akbari[3]

1. Trauma Nursing Research Center, Faculty of Nursing and Midwifery, Kashan University of Medical Sciences, Kashan, Iran.
2. Autoimmune Diseases Research Center, Faculty of Nursing and Midwifery, Kashan University of Medical Sciences, Kashan, Iran.
3. Department of Health, Safety, and Environment Management, Faculty of Health, Kashan University of Medical Sciences, Kashan, Iran.

Use your device to scan and read the article online

Citation: Izadi-Avanji, F. S., et al., 2020. The Effect of a Family-centered Empowerment Model on the Quality of Life of Patients With Stroke. *Journal of Client-Centered Nursing Care*, 6(1), pp. 13-22. https://doi.org/10.32598/JCCNC.6.1.293.4

https://doi.org/10.32598/JCCNC.6.1.293.4

Article info:
Received: 17 Jul 2019
Accepted: 13 Nov 2019
Published: 01 Feb 2020

ABSTRACT

Background: Stroke upsets the quality of life of the patients and their families. The participation of the family in caring for these patients is inevitable. Empowerment programs enhance patients' motivation and knowledge and improve their quality of life and self-care. This research aimed to determine the effect of a program based on the family-centered empowerment model on the quality of life of patients with stroke.

Methods: This clinical trial study was performed on 100 patients with stroke in Shahid Beheshti Hospital in Kashan City, Iran. The subjects were first recruited purposefully and then were randomly divided into two groups. The experimental group received a family-centered empowerment training in 8 sessions, while the control group received no intervention. The

Multi-national: Upper limb virtual reality

Efficacy and safety of non-immersive virtual reality exercising in stroke rehabilitation (EVREST): a randomised, multicentre, single-blind, controlled trial

Gustavo Saposnik, Leonardo G Cohen, Muhammad Mamdani, Sepideth Pooyania, Michelle Ploughman, Donna Cheung, Jennifer Shaw, Judith Hall, Peter Nord, Sean Dukelow, Yongchai Nilanont, Felipe De los Rios, Lisandro Olmos, Mindy Levin, Robert Teasell, Ashley Cohen, Kevin Thorpe, Andreas Laupacis, Mark Bayley, for Stroke Outcomes Research Canada

Summary

Background Non-immersive virtual reality is an emerging strategy to enhance motor performance for stroke rehabilitation. There has been rapid adoption of non-immersive virtual reality as a rehabilitation strategy despite the limited evidence about its safety and effectiveness. Our aim was to compare the safety and efficacy of virtual reality with recreational therapy on motor recovery in patients after an acute ischaemic stroke.

Methods In this randomised, controlled, single-blind, parallel-group trial we enrolled adults (aged 18–85 years) who had a first-ever ischaemic stroke and a motor deficit of the upper extremity score of 3 or more (measured with the Chedoke-McMaster scale) within 3 months of randomisation from 14 in-patient stroke rehabilitation units from four countries (Canada [11], Argentina [1], Peru [1], and Thailand [1]). Participants were randomly allocated (1:1) by a computer-generated assignment at enrolment to receive a programme of structured, task-oriented, upper extremity sessions (ten sessions, 60 min each) of either non-immersive virtual reality using the Nintendo Wii gaming system (VRWii) or simple recreational activities (playing cards, bingo, Jenga, or ball game) as add-on therapies to conventional rehabilitation over a 2 week period. All investigators assessing outcomes were masked to treatment assignment. The primary outcome was upper extremity motor performance measured by total time to complete the Wolf Motor Function Test (WMFT) at the end of the 2 week intervention period, analysed in the intention-to-treat population. This trial is registered with ClinicalTrials.gov, number NTC01406912.

Lancet Neurol 2016; 15: 1019–27

Published Online
June 27, 2016
http://dx.doi.org/10.1016/S1474-4422(16)30121-1

See Comment page 996

Division of Neurology (G Saposnik MD) and Stroke Program (G Saposnik, D Cheung OT), St Michael's Hospital, University of Toronto, Canada; Human Cortical Physiology and Stroke Neurorehabilitation Section, NINDS, NIH, Bethesda, USA (L G Cohen MD); LI Ka Shing Knowledge Institute of St Michael's Hospital, Toronto, Canada (G Saposnik,