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Title: A systematic review of rehabilitation interventions to prevent and treat depression in post-stroke aphasia.

Citation: Disability and rehabilitation; Aug 2018; vol. 40 (no. 16); p. 1870-1892
Author(s): Baker, Caroline; Worrall, Linda; Rose, Miranda; Hudson, Kyla; Ryan, Brooke; O'Byrne, Leana

Purpose: Stepped psychological care is the delivery of routine assessment and interventions for psychological problems, including depression. The aim of this systematic review was to analyze and synthesize the evidence of rehabilitation interventions to prevent and treat depression in post-stroke aphasia and adapt the best evidence within a stepped psychological care framework.

Method: Four databases were systematically searched up to March 2017: Medline, CINAHL, PsycINFO and The Cochrane Library.

Results: Forty-five studies met inclusion and exclusion criteria. Level of evidence, methodological quality and results were assessed. People with aphasia with mild depression may benefit from psychosocial-type treatments (based on 3 level ii studies with small to medium effect sizes). For those without depression, mood may be enhanced through participation in a range of interventions (based on 4 level ii studies; 1 level iii-3 study and 6 level iv studies). It is not clear which interventions may prevent depression in post-stroke aphasia. No evidence was found for the treatment of moderate to severe depression in post-stroke aphasia.

Conclusions: This study found some interventions that may improve depression outcomes for those with mild depression or without depression in post-stroke aphasia. Future research is needed to address methodological limitations and evaluate and support the translation of stepped psychological care across the continuum.

Implications for Rehabilitation: Stepped psychological care after stroke is a framework with levels 1 to 4 which can be used to prevent and treat depression for people with aphasia. A range of rehabilitation interventions may be beneficial to mood at level 1 for people without clinically significant depression (e.g., goal setting and achievement, psychosocial support, communication partner training and narrative therapy). People with mild symptoms of depression may benefit from interventions at level 2 (e.g., behavioral therapy, psychosocial support and problem solving). People with moderate to severe symptoms of depression require specialist mental health/behavioral services in collaboration with stroke care at levels 3 and 4 of stepped psychological care.

Title: Are unstable support surfaces superior to stable support surfaces during trunk rehabilitation after stroke? A systematic review.

Citation: Disability and rehabilitation; Aug 2018; vol. 40 (no. 17); p. 1981-1988
Author(s): Van Criekinge, Tamaya; Saeys, Wim; Vereeck, Luc; De Hertogh, Willem; Truijen, Steven

Objective: To investigate the effect of trunk rehabilitation using unstable support surfaces compared to stable support surfaces, on static and dynamic balance after stroke.

Materials and Methods: A systematic review was conducted to identify relevant articles from the following databases: Medline (PubMed), Web of Science, PEDro, REHAB+, Rehabdata, Science Direct, CIRRIE, and Cochrane library. Studies were included when they involved adult stroke patients; were controlled clinical trials; assessed static and dynamic balance; and incorporated trunk exercises on stable or unstable support surfaces. Databases were systematically screened until April 2017. Risk of bias assessment was performed by means of the PEDro scale.

Results: Seven studies met the inclusion criteria, of which one had a low risk of bias and six a high risk. In total, 184 stroke patients were evaluated. Unstable support surfaces used
during therapy were physio balls, balance pads, air cushions, tilting boards, and slings. Trunk training was provided either as additional therapy or without conventional therapy. All modalities, except for the sling, showed larger improvements compared to stable support surfaces on balance performance.

**Conclusions:** Trunk training on unstable support surfaces seemed to be superior to stable support surfaces in improving static and dynamic balance. However, more research is necessary, since the risk of bias of the included studies was high. Implications for Rehabilitation Trunk training on unstable surfaces seems to be superior to stable surfaces in improving static and dynamic balance. Physio balls, air cushions, balance pads, and unstable boards are appropriate supports to enhance balance during stroke rehabilitation. Implementing unstable supports early in rehabilitation might be more beneficial.

**Title:** Assessment of texture discrimination ability at the sole of the foot in subjects with chronic stroke compared with young and elderly subjects with no neurological deficits: a reliability and validity study.

**Citation:** Disability & Rehabilitation; Aug 2018; vol. 40 (no. 16); p. 1960-1966

**Author(s):** Ofek, Hadas; Alperin, Mordechai; Knoll, Tsi; Livne, Daphna; Laufer, Yocheved

**Purpose:** To examine validity and test-retest reliability of a sensory test developed to evaluate ability of elderly subjects with/out a stroke to discriminate between textures with the sole of their foot.

**Methods:** Subjects poststroke, old adults and young subjects were tested twice. Twelve materials relevant to foot function (e.g., gravel, sand) were used. Blindfolded subjects were requested to discriminate with the sole of each foot one outstanding texture among three textures presented in each of 12 subtests. ANOVA, ICC and Bland-Altman tests were used to determine group/leg differences and test-retest reliability.

**Results:** Discrimination ability of the involved lower extremity poststroke is significantly reduced. Ability in individuals with no neurological impairment is age related. Good test-retest (ICC = 0.81) reliability was demonstrated for the impaired foot of subjects poststroke. The 95% repeatability ranges were age related with the highest range demonstrated for the involved foot poststroke. A significant fair negative correlation was demonstrated between texture discrimination ability and tactile detection threshold measured by Semmes-Weinstein monofilaments for the involved foot in poststroke subjects. **Conclusion:** This newly developed assessment tool demonstrates concurrent and known-groups validity and is reliable for determining texture discriminative ability of the foot in individuals post-stroke and in older adults with no neurological impairment. Implications for rehabilitation: The texture discrimination test presented here is a valid and reliable tool, providing quantitative assessment of sensory function at the sole of the foot in older adults with no neurologic deficits and in subjects poststroke. Lower extremity texture discrimination test is easy to administer in the clinic and might suggest directions for individually tailored, lower extremity, sensory retraining protocols.

**Title:** Association of catheter ablation for atrial fibrillation with mortality and stroke: A systematic review and meta-analysis.

**Citation:** International journal of cardiology; Sep 2018; vol. 266; p. 136-142

**Author(s):** Barra, Sérgio; Baran, Jakub; Narayanan, Kumar; Boveda, Serge; Fynn, Simon; Heck, Patrick; Grace, Andrew; Agarwal, Sharad; Primo, João; Marijon, Eloi; Providência, Rui

**Background:** Maintenance of sinus rhythm has been associated with lower mortality, but whether atrial fibrillation (AF) ablation per se benefits hard outcomes such as mortality and stroke is still debated.
**Objective:** To determine whether AF ablation is associated with a reduction in all-cause mortality and stroke compared with medical therapy alone.

**Methods:** Literature search looking for both randomized and observational studies comparing AF catheter ablation vs. medical management. Data pooled using random-effects. Risk ratios (RR) with 95% confidence intervals (CI) used as a measure of treatment effect. The primary and secondary outcomes were all-cause mortality and occurrence of cerebrovascular events during follow-up, respectively.

**Results:** Thirty studies were eligible for inclusion, comprising 78,966 patients (25,129 receiving AF ablation and 53,837 on medical treatment) and 233,990 patient-years of follow-up. The pooled data of studies revealed that ablation was associated with lower risk of all-cause mortality: 5.7% vs. 17.9%; RR=0.44, 95% CI 0.32-0.62, p<0.001. In a sensitivity analysis by study design, a survival benefit of AF ablation was seen in randomized studies, with no heterogeneity (mortality risk 4.2% vs. 8.9%; RR=0.55, 95% CI 0.39-0.79, p=0.001, I²=0%), and also in observational studies, but with marked heterogeneity (6.1% vs. 18.3%; RR=0.39, 95% CI 0.26-0.59, p<0.001, I²=95%). The mortality benefit in randomized studies was mainly driven by trials performed in patients with left ventricular (LV) dysfunction and heart failure. The pooled risk of a cerebrovascular event was lower in patients receiving AF ablation (2.3% vs. 5.5%; RR=0.57, 95% CI 0.46-0.70, p<0.001, I²=62%), but no difference was seen in randomized trials (2.2% vs. 2.1%; RR=0.94, 95% CI 0.46-1.94, p=0.87, I²=0%).

**Conclusions:** Ablation of atrial fibrillation associates with a survival benefit compared with medical treatment alone, although evidence is restricted to the setting of heart failure and LV systolic dysfunction.

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**Title:** Carotid-Femoral Pulse Wave Velocity in the Prediction of Cardiovascular Events and Mortality: An Updated Systematic Review and Meta-Analysis.

**Citation:** Angiology; Aug 2018; vol. 69 (no. 7); p. 617-629

**Author(s):** Zhong, Qi; Hu, Ming-Jun; Cui, Yan-Jie; Liang, Ling; Zhou, Meng-Meng; Yang, Yu-Wei; Huang, Fen

**Abstract:** Arterial stiffness (AS) is a predictor of coronary artery outcomes in patients with cardiovascular disease (CVD). Carotid-femoral pulse wave velocity (cf-PWV) is a commonly used method for assessing AS. This study aimed to assess the relationship between cf-PWV and clinical CVD events. Of the 786 studies identified, 19 studies were included in the final meta-analysis. Meta-analysis revealed that participants with high cf-PWV by 1 standard deviation (SD), 1 m/s, and cutoff points have a high pooled relative risk for CVD events (1 SD: 1.25, 95% confidence interval [CI]: 1.19-1.31; 1 m/s: 1.12, 95% CI: 1.07-1.18; and cutoff points: 1.80, 95% CI: 1.45-2.14) and CVD mortality (1 SD: 1.23, 95% CI: 1.15-1.31; 1 m/s: 1.09, 95% CI: 1.04-1.14; and cutoff points: 1.85, 95% CI: 1.46-2.24). In addition, we found that the predictive value of increased AS was higher in patients with higher disease risk for total CVD events and CVD mortality than in other patients. Carotid-femoral pulse wave velocity is a useful biomarker to improve the prediction of CV risk for patients and identify high-risk populations who may benefit from aggressive CV risk factor management.

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**Title:** Cerebral small vessel disease and risk of incident stroke, dementia and depression, and all-cause mortality: A systematic review and meta-analysis.

**Citation:** Neuroscience and biobehavioral reviews; Jul 2018; vol. 90 ; p. 164-173

**Author(s):** Rensma, Sytze P; van Sloten, Thomas T; Launer, Lenore J; Stehouwer, Coen D A
Abstract: MRI features of cerebral small vessel disease (CSVD), i.e. white matter hyperintensities, lacunes, microbleeds, perivascular spaces, and cerebral atrophy, may be associated with clinical events, but the strength of these associations remains unclear. We conducted a systematic review and meta-analysis on the association between these features and incident ischaemic and haemorrhagic stroke, all-cause dementia and depression, and all-cause mortality. For the association with stroke, 36 studies were identified (number of individuals/events \([n] = 38,432/4,136\)), for dementia 28 \((n = 16,458/1,709)\), for depression nine \((n = 9,538/1,746)\), and for mortality 28 \((n = 23,031/2,558)\). Only two studies evaluated perivascular spaces; these results were not pooled. Pooled analyses showed that all other features were associated with all outcomes (hazard ratios ranged 1.22-2.72). Combinations of two features were more strongly associated with stroke than any individual feature. Individual features and combinations of CSVD features are strongly associated with incident ischaemic and haemorrhagic stroke, all-cause dementia and depression, and all-cause mortality. If these associations are causal, the strength of these associations suggests that a substantial burden of disease is attributable to CSVD.

Title: Comparison of the efficacy and safety of thrombectomy devices in acute stroke: a network meta-analysis of randomized trials.

Citation: Journal of neurointerventional surgery; Aug 2018; vol. 10 (no. 8); p. 729-734

Author(s): Saber, Hamidreza; Rajah, Gary B; Kherallah, Riyad Y; Jadhav, Ashutosh P;

Introduction: Mechanical thrombectomy (MT) is increasingly used for large-vessel occlusions (LVO), but randomized clinical trial (RCT) level data with regard to differences in clinical outcomes of MT devices are limited. We conducted a network meta-analysis (NMA) that enables comparison of modern MT devices (Trevo, Solitaire, Aspiration) and strategies (stent retriever vs aspiration) across trials.

Methods: Relevant RCTs were identified by a systematic review. The efficacy outcome was 90-day functional independence (modified Rankin Scale (mRS) score 0-2). Safety outcomes were 90-day catastrophic outcome (mRS 5-6) and symptomatic intracranial hemorrhage (sICH). Fixed-effect Bayesian NMA was performed to calculate risk estimates and the rank probabilities.

Results: In a NMA of six relevant RCTs (SWIFT, TREVO2, EXTEND-IA, SWIFT-PRIME, REVASCAT, THERAPY; total of 871 patients, 472 Solitaire vs medical-only, 108 Aspiration vs medical-only, 178 Trevo vs Merci, and 113 Solitaire vs Merci) with medical-only arm as the reference, Trevo had the greatest functional independence (OR 4.14, 95% credible interval (CrI) 1.41-11.80; top rank probability 92%) followed by Solitaire (OR 2.55, 95% CrI 1.75-3.74; top rank probability 72%). Solitaire and Aspiration devices had the greatest top rank probability with respect to low sICH and catastrophic outcomes (76% and 91%, respectively), but without significant differences between each other. In a separate network of seven RCTs (MR-CLEAN, ESCAPE, EXTEND-IA, SWIFT-PRIME, REVASCAT, THERAPY, ASTER; 1737 patients), first-line stent retriever was associated with a higher top rank probability of functional independence than aspiration (95% vs 54%), with comparable safety outcomes.

Conclusions: These findings suggest that Trevo and Solitaire devices are associated with a greater likelihood of functional independence whereas Solitaire and Aspiration devices appear to be safer.
Title: Complications Associated With Nasogastric Tube Placement in the Acute Phase of Stroke: A Systematic Review.

Citation: The Journal of neuroscience nursing : journal of the American Association of Neuroscience Nurses; Aug 2018; vol. 50 (no. 4); p. 193-198

Author(s): Nascimento, Ana; Carvalho, Mariana; Nogueira, Jerina; Abreu, Pedro; Nzwalo, Hipólito

Abstract: This systematic review explores the frequency of complications associated with nasogastric tube (NGT) placement in patients with acute stroke. The unique condition of the dysphasic, immobile, confused immunosuppressed patient who has had an acute stroke hampers any consistent inference from other neurological or nonneurological condition in which NGT placement is used. Twelve studies including 921 patients fed by NGT in the acute phase (first 4 weeks) were included in the analysis. The overall quality of the included studies was good. The main limitation was the heterogeneity and small size of most studies. The occurrence of NGT placement failure and malposition, hypoxemia, and regurgitation was addressed in the selected studies. Recurrent NGT dislodgement and a combination of tube dislodgement and blockage of the tube were the main reasons for NGT placement failure. In the absence of chronic hypoxic pulmonary or cardiac disorders, NGT feeding was not associated with clinically significant hypoxemia in patients who have had an acute stroke. Data are scarce on the topic. Research about the frequency of local and systemic NGT complications and strategies for prevention will certainly contribute to enhance evidence-based management of dysphagia in acute stroke.

Title: Do patients actually do what we ask: patient fidelity and persistence to the Targets and Self-Management for the Control of Blood Pressure in Stroke and at Risk Groups blood pressure self-management intervention.

Citation: Journal of Hypertension; Aug 2018; vol. 36 (no. 8); p. 1753-1761

Author(s): Schwartz, Claire L.; Seyed-Safi, Ashkon; Haque, Sayeed; Bray, Emma P.; Greenfield, Shelia; Hobbs, F. D. Richard; Little, Paul; Mant, Jonathan; Williams, Bryan; Mcmanus, Richard J.

Objective: Self-management of hypertension can reduce and control blood pressure (BP) compared with clinic monitoring. However, self-management relies on patients following an algorithm, which may be variably adhered to. This study reports fidelity of high-risk patients to the self-management algorithm set by the TASMIN-SR trial.

Methods: Patients with hypertension, above target clinic BP and one or more of stroke, diabetes, coronary heart disease or chronic kidney disease, were invited to self-monitor following an individualized self-titration algorithm. Home BP readings and medication change details were submitted monthly for 12 months. Readings downloaded from patients’ electronic monitors were compared with written submissions, and protocol fidelity was assessed.

Results: Two hundred and seventy-six patients were randomized to self-management and 225 (82%) completed the required training sessions. Of these, 166 (74%) completed self-management. A total of 11385 (89.6%) submitted readings were accurate compared with corresponding downloaded monitor readings. Mean error rate was 5.2% per patient, which increased with age but not comorbidities. Patients made 475 of 683 (69.5%) algorithm-recommended medication changes, equating to nearly three medication changes per patient. Mean SBP for patients who completed training and made all recommended changes dropped from 141 mmHg (95% CI 138.26-144.46) to 121 mmHg (95% CI 118.30-124.17 mmHg) compared with 129 mmHg (95% CI 125.27-136.73 mmHg) for patients who made none.
**Conclusion:** Most patients randomized to self-management completed training; however, 36% of these had dropped out by 12 months. Self-monitoring was largely undertaken properly and accurately recorded. Fidelity with self-management was associated with lower achieved SBP. Successful implementation of self-management into daily practice requires careful training and should be accompanied by monitoring of fidelity.

**Title:** Effect of Exercise on Physical Recovery of People with Locked-In Syndrome after Stroke: What Do We Know from the Current Evidence? A Systematic Review.

**Citation:** Cerebrovascular diseases extra; Jul 2018; vol. 8 (no. 2); p. 90-95

**Author(s):** Law, Ying Man; Feng, Lan Fang; Liang, Qui; Meng, Li Jiao; Shen, Peng; Yu, Shuai Jiang; Pao, Wing Yi

**Introduction:** Locked-in syndrome (LIS) results from a brainstem lesion in the pons. Ischemic stroke is the most common etiology of LIS. People with LIS have poor mobility with serious complications due to immobilization. Benefits of exercise after stroke have been widely reported. However, little is known about what and how much exercise should be prescribed for these patients.

**Objectives:** To explore and evaluate the effect of exercise on the physical recovery of people with LIS after stroke.

**Methods:** We searched the following databases (last searched August 2017): EMBASE, MEDLINE, PubMed, CINAHL, AMED, PEDro, Cochrane Central Register of Controlled Trials, REHABDATA, Google Scholar, WANFANG, CNKI, and CQVIP. Handsearching of relevant journals and reference lists was also performed. The Oxford Centre for Evidence-Based Medicine was used to assess the evidence level of the included studies.

**Results:** We identified 5 papers from 207 papers involving 35 cases; 26 cases had various degrees of improvement in physical performance after exercise; 9 cases had no change. Five types of exercises and prescriptions were adopted. Study designs and interventions were heterogeneous. All studies contained mixed rehabilitation interventions. A total of 8 different outcome measurement tools have been reported in the studies.

**Conclusion:** Studies indicate a positive trend of effect of exercise for physical recovery of people with LIS after stroke. The effects were not significant. No adverse event has been reported. The quality of the existing evidence is relatively low since the papers were either case series or case studies. Further studies are needed on exercise types and dosages for better prescriptions for people with LIS after stroke. This may help to extend their lives with better control of the complications and to improve their quality of life.

**Title:** Effects of blood pressure-lowering treatment on cardiovascular outcomes and mortality: 14 - effects of different classes of antihypertensive drugs in older and younger patients: overview and meta-analysis.

**Citation:** Journal of hypertension; Aug 2018; vol. 36 (no. 8); p. 1637-1647

**Author(s):** Thomopoulos, Costas; Parati, Gianfranco; Zanchetti, Alberto

**Background and Objectives:** The five major classes of blood pressure (BP)-lowering drugs have all been shown to significantly reduce the risk of major cardiovascular events when compared with placebo, and when directly (head-to-head) compared, no significant differences in their overall effectiveness have been detected, except for minor differences in cause-specific events. It is unknown, however, whether age-related differences exist and if some classes of drugs are differently effective in older or younger individuals. This clinically relevant question has been the object of a systematic search and meta-analysis of all available data.
Methods: Two databases we had previously identified [72 placebo-controlled BP-lowering randomized clinical trials (RCTs) in 260,210 individuals and 50 RCTs head-to-head comparing treatments with BP-lowering drugs of different classes in 247,006 individuals] were searched for separately reported data on patients older or younger than 65 years, and the data were further stratified according to the class of drug [diuretics, beta-blockers, calcium antagonists, angiotensin-converting enzyme (ACE) inhibitors, angiotensin receptor blockers] compared with placebo or with other drug classes. Seven fatal and nonfatal outcomes were considered for benefits. Adverse events were investigated as permanent treatment discontinuations for adverse events. Risk ratios and absolute risk changes were calculated by a random effects model. Effects at older and younger ages were compared by heterogeneity test.

Results: We identified 20 placebo-controlled RCTs on 55,645 older individuals and 21 on 99,621 younger individuals, and 21 head-to-head drug comparison RCTs on 94,228 older individuals and 27 on 100,232 younger individuals (for a total of 349,726 individuals). When compared with placebo, all five classes of BP-lowering drugs significantly reduced the risk of major cardiovascular events or stroke, with no significant difference between older and younger patients. However, in head-to-head comparisons, no significant difference was found between older and younger patients in the effects of diuretics, calcium antagonists, ACE inhibitors and angiotensin receptor blockers on all cardiovascular outcomes, whereas beta-blockers revealed an age-dependent effectiveness, being equally effective as the other agents at an age below 65 years, but less effective at an older age.

Conclusion: Most BP-lowering classes are equally effective in preventing risk of fatal and nonfatal cardiovascular events both in older and younger patients, whereas beta-blockers, though being equally effective as the other agents in patients younger than 65, loose some of their effectiveness at an older age.

Title: Effects of Telestroke on Thrombolysis Times and Outcomes: A Meta-analysis.

Author(s): Baratloo, Alireza; Rahimpour, Leila; Abushouk, Abdelrahman Ibrahim; Safari, Saeed; Lee, Chung Wing; Abdalvand, Ali

Source: Prehospital emergency care : official journal of the National Association of EMS Physicians and the National Association of State EMS Directors; 2018; vol. 22 (no. 4); p. 472-484

PubMedID: 29345529

Objective: Telestroke systems are tools, used to provide an advanced stroke care in regions without sufficient neurologic services. We performed this meta-analysis to assess the effects of telemedicine on treatment times and clinical outcomes of acute stroke care.

Methods: A literature search of PubMed, SCOPUS, and Cochrane CENTRAL was conducted for original studies investigating telemedicine applications in acute stroke care. Dichotomous data on treatment outcomes were pooled as odds ratios (ORs), while continuous data on thrombolysis times were pooled as mean differences (MDs) with 95% confidence interval (CI), using RevMan software (version 5.3).

Results: Pooling data from 26 studies (6605 thrombolysed patients) showed no significant differences between the telestroke and control groups in terms of in-hospital mortality (OR = 1.21, 95% CI [0.98, 1.49]), 90-day mortality (OR = 1.08, 95% CI [0.85, 1.37]), symptomatic intracranial hemorrhage (sICH) (OR = 1.10, 95% CI [0.79, 1.53]), and favorable clinical outcome at discharge (OR = 1.03, 95% CI [0.69, 1.53]) and 90 days later (OR = 0.99, 95% CI [0.82, 1.18]). The onset-to-door (OTD) duration (MD = -10.4 minutes, 95% CI [-14.79, -6.01]) and length of hospital stay (MD = -0.55 days, 95% CI [-1.02, -0.07]) were significantly shorter in the telestroke group, compared to the control group. Although the overall effect estimate (under the fixed-effect model) showed a significant decrease in
the onset-to-treatment (OTT) duration in the telestroke group (MD = -5.83 minutes, 95% CI [-8.57, -3.09]), employing the random-effects model for between-study heterogeneity abolished this significance (MD = -5.90 minutes, 95% CI [-13.23, 1.42]).

**Conclusion:** Telestroke significantly reduced OTD and hospital stay durations in stroke patients without increasing the risk of mortality or sICH. Therefore, telemedicine can improve stroke care in regional areas with minor experience in thrombolysis. Further randomized controlled trials are needed to assess the benefits of telestroke systems, especially in terms of cost-effectiveness and quality of life outcomes.

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**Title:** Efficacy of Interventions to Improve Respiratory Function After Stroke.

**Citation:** Respiratory care; Jul 2018; vol. 63 (no. 7); p. 920-933

**Author(s):** Menezes, Kênia Kp; Nascimento, Lucas R; Avelino, Patrick R; Alvarenga, Maria Tereza Mota; Teixeira-Salmela, Luci F

**Background:** The aim of this study was to systematically review all current interventions that have been utilized to improve respiratory function and activity after stroke.

**Methods:** Specific searches were conducted. The experimental intervention had to be planned, structured, repetitive, purposive, and delivered with the aim of improving respiratory function. Outcomes included respiratory strength (maximum inspiratory pressure [PImax], maximum expiratory pressure [PEmax]) and endurance, lung function (FVC, FEV1, and peak expiratory flow [PEF]), dyspnea, and activity. The quality of the randomized trials was assessed by the PEDro scale using scores from the Physiotherapy Evidence Database (www.pedro.org.au), and risk of bias was assessed in accordance with the Cochrane Handbook for Systematic Reviews of Interventions. RESULTS The 17 included trials had a mean PEDro score of 5.7 (range 4-8) and involved 616 participants. Meta-analyses showed that respiratory muscle training significantly improved all outcomes of interest: PImax (weighted mean difference 11 cm H2O, 95% CI 7-15, I² = 0%), PEmax (8 cm H2O, 95% CI 2-15, I² = 65%), FVC (0.25 L, 95% CI 0.12-0.37, I² = 29%), FEV1 (0.24 L, 95% CI 0.17-0.30, I² = 0%), PEF (0.51 L/s, 95% CI 0.10-0.92, I² = 0%), dyspnea (standardized mean difference -1.6 points, 95% CI -2.2 to -0.9; I² = 0%), and activity (standardized mean difference 0.78, 95% CI 0.22-1.35, I² = 0%). Meta-analyses found no significant results for the effects of breathing exercises on lung function. For the remaining interventions (ie, aerobic and postural exercises) and the addition of electrical stimulation, meta-analyses could not be performed. CONCLUSIONS This systematic review reports 5 possible interventions used to improve respiratory function after stroke. Respiratory muscle training proved to be effective for improving inspiratory and expiratory strength, lung function, and dyspnea, and benefits were carried over to activity. However, there is still no evidence to accept or refute the efficacy of aerobic, breathing, and postural exercises, or the addition of electrical stimulation in respiratory function.

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**Title:** Enablers and barriers of adherence to home exercise programmes after stroke: caregiver perceptions.

**Citation:** International Journal of Therapy & Rehabilitation; Jul 2018; vol. 25 (no. 7); p. 353-364

**Author(s):** Scorrano, Maryke; Ntsiea, Veronica; Maleka, Douglas

**Background/Aims:** In stroke rehabilitation, the goal is to discharge patients at their optimal functional level, however, this level of independence is not always reached at discharge due to decreased length of stay and a high demand for beds. Thus, patients rely upon caregivers to assist them not only with activities of daily living but also with home exercise programmes. The purpose of this study was to establish caregivers’ perceived enablers and barriers of adherence to home exercise programmes in stroke survivors.
Methods: A qualitative study design was used with in-depth interviews of the caregivers of stroke survivors who were dependent in functional activities.

Findings: The average age of the caregivers was 47.8 years (±13.96) years and all of them were the stroke survivors’ family members. The most common enablers of adherence to home exercise programmes were self-motivation, external motivation from friends and family, having a daily routine, spirituality, caregivers’ attitude and desires, and caregiver knowledge. The most common barriers of adherence to home exercise programmes were general health issues, caregiver having other responsibilities, lack of family and social support, caregiver burden and stress, low self-efficacy and mood, and fear of falling. Conclusions: Adherence to home exercise programmes is multifactorial and does not only relate to the stroke survivor alone. Caregivers have a lot of responsibilities and experience emotional strain and burden. This has an influence on stroke survivors’ adherence to home exercise programmes as they rely upon caregivers for assistance.

Title: Experiences of stroke survivors, their families and unpaid carers in goal setting within stroke rehabilitation: a systematic review of qualitative evidence.

Citation: JBI Database of Systematic Reviews & Implementation Reports; Jun 2018; vol. 16 (no. 6); p. 1418-1453

Author(s): Lloyd, Anna; Bannigan, Katrina; Sugavanam, Thavapriya; Freeman, Jennifer

Objective: The objective of the review was to synthesize the best available qualitative evidence regarding the experiences of stroke survivors, their families and unpaid carers, about goal setting within stroke rehabilitation.

Introduction: Clinical guidelines recommend person-centered goal setting in stroke rehabilitation but many barriers exist to its implementation. Individual differences and preferences, of both the stroke survivor and practitioner, may influence involvement in goal setting. A stroke survivor’s relationship with close family members and unpaid carers can be powerful and could influence rehabilitation, recovery and goal setting. Inclusion criteria: The participants of interest were adults (over 18 years) who had experienced a stroke and undergone rehabilitation, and their families and unpaid carers. The phenomena of interest were the experiences of goal setting within stroke rehabilitation for stroke survivors, their families and unpaid carers. The context was stroke rehabilitation in acute and community hospitals, inpatient rehabilitation units and the community. Studies considered for this review were qualitative primary research studies and the qualitative portion of mixed methods research.

Methods: A three-step search strategy was used to identify English language qualitative primary research studies (both published and unpublished) through November 2017. Two reviewers independently appraised the included studies using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Qualitative Research. Studies were included if they achieved 50% "yes" results for the methodological assessment. Data were extracted from the included papers using the standardized JBI qualitative data extraction tool. Data were synthesized using meta-aggregation.

Results: Four studies were included in this review, from which 44 findings were extracted. These were aggregated into 12 categories and four synthesized findings: (1) Person-centered goal setting is possible but often does not occur;(2) Practitioners shape the context of goal setting;(3) Practitioners need to listen to the person and know "who they are" - there is a need for an individualized approach to goal setting;(4) Recovery is ongoing and unpredictable. No findings reporting the experiences of goal setting from the perspective of family or unpaid carers were found, therefore all findings represent stroke survivor experiences. The role of goal setting in self-management could not be extracted from the data.

Conclusions: Person-centered goal setting within stroke rehabilitation is both possible and rewarding but often does not occur. Goal setting contributes to the post-stroke rehabilitation
experience and can be positively or negatively influenced by practitioners. Maintaining hope and a sense of forward momentum in recovery after stroke is perceived by stroke survivors as important and could be supported using goal setting that is tailored to the individual's needs and preferences. Future research should focus on refining individualized methods of goal setting in stroke rehabilitation and the role of the practitioner in this, including what skills are needed and how they can be acquired. The identified gaps in the literature about family members' and unpaid carers' experiences, and the role of goal setting in self-management, warrant further research.

Title: Factors associated with participation in life situations for adults with stroke: a systematic review.

Citation: Archives of physical medicine and rehabilitation; Jul 2018

Author(s): Ezekiel, Leisle; Collett, Johnny; Dawes, Helen; Mayo, Nancy E; Pang, Lori; Field, Leanne

Objectives: To identify biopsychosocial factors associated with participation outcomes for adults with stroke and to investigate factors associated with participation at different time points post stroke. DATA SOURCES Medline, CINAHL, AMED, PsycINFO and Web of Science were systematically searched using key words "stroke", "participation" and "outcomes" and their synonyms on 15th May 2017. STUDY SELECTION Observational studies reporting on biopsychosocial factors and participation outcomes for community dwelling adults with stroke were selected. Studies were eligible for inclusion if participation outcomes were measured using indices that mapped to the participation domain of the ICF. Intervention studies were excluded. A second reviewer checked all studies against eligibility criteria at each stage.

Data Extraction: Data were extracted on any statistically determined association between biopsychosocial factors and participation outcomes.

Data Synthesis: The proportion of studies reporting significant associations with variables were classified according to the ICF. The exact binomial test was used to determine the probability that the proportion of studies reporting significant associations was due to chance alone. Qualitative descriptive summaries of each study allowed consideration of interactions between variables and changes in participation over time points.

Conclusions: Whilst depressive symptoms, cognitive functioning and mobility were found to have the strongest associations with participation, we found that other frequently occurring factors (such as fatigue and environmental factors) were less extensively considered. The diversity of outcome measures encountered within the review highlight the need for a consensus on a core set of outcome measures to evaluate long term participation in life situations after stroke.

Title: Impact of neutrophils to lymphocytes ratio on major clinical outcomes in patients with acute coronary syndromes: A systematic review and meta-analysis of the literature.

Citation: International journal of cardiology; Sep 2018; vol. 266 ; p. 31-37

Author(s): Dentali, Francesco; Nigro, Olga; Squizzato, Alessandro; Gianni, Monica; Zuretti, Francesca; Grandi, Anna Maria; Guasti, Luigina

Background: Inflammatory markers are significantly associated with cardiovascular disease. The ratio between neutrophils and lymphocytes (NLR) is a potential new biomarker, which can single out individuals at risk for future cardiovascular events. Among total white blood cell count (WBC) and its subtypes, NLR seems to have the greatest predictive value for death and major adverse cardiovascular events (MACE) in
patients with acute coronary syndrome (ACS). We conducted a meta-analysis of the literature to assess the relation between NLR and cardiovascular outcomes in STEMI/NSTEMI patients.

**Methods:** MEDLINE and EMBASE databases were searched. Two reviewers selected studies and extracted data. Pooled results were reported as odds ratios (ORs) and were presented with the corresponding 95% confidence intervals (CI).

**Results:** Twenty-three studies for a total of >16,000 patients were included. Compared to those with low NLR, high NLR on-admission was associated with a higher overall mortality both in patients with STEMI (OR: 4.60, 95% CI: 2.84-7.45; P < 0.00001) and in patients with NSTEMI (OR: 6.41, 95% CI: 2.65-15.50; P < 0.00001). An increased MACE risk was found in STEMI patients with high NLR (OR: 3.71, 95% CI: 2.67-5.17; P < 0.00001). Post-PCI mortality risk was significantly increased in patients with high NLR (OR: 3.76, 95% CI: 2.64-5.34; P < 0.00001).

**Conclusions:** In this large meta-analysis on prognostic significance of NLR in ACS we found that on-admission high NLR in patients with STEMI/NSTEMI appeared to affect clinically important outcomes including both in-hospital and long-term mortality and MACE.

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**Title:** Implementation of an in-hospital stroke simulation protocol.

**Citation:** International Journal of Health Care Quality Assurance (09526862); Sep 2018; vol. 31 (no. 6); p. 552-562

**Author(s):** Ortega, Johis; Gonzalez, Juan M.; de Tantillo, Lila; Gattamorta, Karina

**Purpose:** A major component of hospital stroke care involves prompt identification of stroke in admitted patients. Delays in recognizing stroke symptoms and initiating treatment for in-hospital stroke can adversely impact patient outcomes. This quality improvement intervention used simulation together with a traditional lecture to instruct nurses at a university hospital about a new stroke protocol being implemented to increase rapid recognition of stroke and meet Joint Commission National Hospital Inpatient Quality Measures. The paper aims to discuss these issues.

**Design/methodology/approach:** In total, 86 registered nurses from the neurology and cardiology units attended a lecture and participated in a simulation scenario with a standardized patient exhibiting stroke symptoms. Participants completed a ten-item pre-test to measure their knowledge of stroke care prior to the lecture; they repeated the test pre-simulation and once again post-simulation to evaluate changes in knowledge.

**Findings:** Overall mean stroke knowledge scores increased significantly from pre-lecture to pre-simulation, and from pre-simulation to post-simulation. Simulation plus lecture was more effective than lecture alone in increasing knowledge about hospital stroke protocol despite assigned unit (cardiology or neurology), years of experience, or previous exposure to simulation.

**Research limitations/implications:** All eligible nurses who agreed to participate received training, making it impossible to compare improvements in knowledge to those who did not receive the training. Originality/value A diverse array of nursing professionals and their patients may benefit from simulation training. This quality improvement intervention provides a feasible model for establishing new care protocols in a hospital setting.

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**Title:** Increased risk of ischemic stroke associated with new-onset atrial fibrillation complicating acute coronary syndrome: A systematic review and meta-analysis.

**Citation:** International journal of cardiology; Aug 2018; vol. 265 ; p. 125-131

**Author(s):** Luo, Jiachen; Li, Hongqiang; Qin, Xiaoming; Liu, Baoxin; Zhao, Jinlong; Maihe, Guli; Li, Zhiqiang; Wei, Yidong
Background: Atrial fibrillation has been established as a major risk factor of ischemic stroke, however, the influence of new-onset atrial fibrillation (NOAF) complicating acute coronary syndrome (ACS) on ischemic stroke remains controversial. This meta-analysis aimed to validate the association between NOAF complicating ACS and ischemic stroke.

Methods: We identified randomized controlled trials and cohort studies comparing the ischemic stroke risk between patients with NOAF and sinus rhythm after ACS by searching MEDLINE, EMBASE and Cochrane Central Register of Controlled Trials databases. We included studies reporting the number of ischemic stroke events or their risk estimates at the longest follow-up. We pooled risk ratios (RRs) using a random-effects model. This meta-analysis is registered in PROSPERO (CRD42017079858).

Results: In the 14 included studies (n = 292,774, 5 randomized controlled trials and 9 cohort studies), NOAF was associated with an increased risk of ischemic stroke (RR: 2.84, 95% confidence interval [CI]: 1.91-4.23; 6 studies), especially for patients with ST-segment elevation myocardial infarction (RR: 4.01, 95% CI: 2.61-6.18; 3 studies). In addition, the detrimental impact persisted in patients with transient NOAF (RR: 3.05, 95% CI: 1.63-5.70; 3 studies). The pooled result from a sensitivity analysis in which all individual components in the CHA2DS2-VASc score (heart failure, hypertension, age, diabetes, previous stroke, vascular disease and female sex) had been adjusted further validated the association between NOAF and ischemic stroke (RR: 2.32, 95% CI: 1.53-3.52; 4 studies).

Conclusions: NOAF is significantly associated with ischemic stroke events in patients with ACS, even after adjustment for several important ischemic stroke risk factors.

Title: Informal aphasia assessment, interaction and the development of the therapeutic relationship in the early period after stroke.

Citation: Aphasiology; Aug 2018; vol. 32 (no. 8); p. 876-901

Author(s): Hersh, Deborah; Wood, Penelope; Armstrong, Elizabeth

Background: Speech pathologists tend to favour informal assessment over formal, standardised batteries in the acute/sub-acute hospital setting, often using their own local screening tools, subtests or non-standardised assessments. Despite the tendency to use informal assessment measures, little research has been done on what might characterise informality in assessment. Aims: Using a systemic functional linguistics framework and thematic analysis of interview data, the aims of this study were to explore interactions during informal assessment, the balance of clinician-centred and client-centred interactions during sessions and their impact on the development of the therapeutic relationship.

Methods and Procedures: This small study sought to capture authentic initial and review informal assessment sessions and involved three men with aphasia (74 years/3 weeks post; 48 years/6 weeks post; 80 years/4 days post), who happened to be on the caseload of a single therapist at the time of the study. Inclusion criteria were the ability to provide consent (with communication support if necessary), to be inpatients within the first 12 weeks post-stroke, with no psychiatric history or dementia. Videos of three aphasia assessment sessions were collected, with recorded reflective interviews with the therapist, and two of the patients, following each one. Assessment sessions were transcribed and then analysed in full for their speech function moves. Both synoptic analysis (quantifying choices per speaker) and dynamic analysis (looking at choices through the exchange) were carried out. Exchanges were also considered in the light of the issues raised in the reflective interviews.

Outcomes and Results: While all the assessment sessions were typically controlled by the therapist and had sections which followed the classic request, response, evaluation type pattern, there were examples of dynamic assessment and of casual conversation including a range of moves to introduce new material and humour. The clinician’s reflections highlighted the need to individualise sessions, integrate assessment and therapy, and reveal competence and areas of retained ability.
Conclusions: This work highlights the importance of distinguishing between informal assessment measures/tools and informal assessment interaction. It shows the efforts both therapists and patients make to normalise or casualise their interactions within the potentially awkward context of testing, and has implications for how to make the best therapeutic use of the time spent in early aphasia assessment. The tendency to use informal assessments along with informality in exchanges reflects relationship building required for therapy.

Title: Living and ageing with stroke: an exploration of conditions influencing participation in social and leisure activities over 15 years.

Citation: Brain Injury; Jul 2018; vol. 32 (no. 7); p. 858-866
Author(s): Norlander, Anna; Iwarsson, Susanne; Jönsson, Ann-Cathrin; Lindgren, Arne; Månsson Lexell, Eva

Objective: To explore conditions influencing long-term participation in social and leisure activities among people who have had a stroke.

Methods: This study had a qualitative design, using a grounded theory methodology. Data collection was based on in-depth interviews performed 15 years after a first-ever stroke with 10 persons recruited from a population-based stroke cohort in Sweden. The study also included four family members.

Findings: Over time, the stroke meant a changed but gradually normalised life situation. Participation in social and leisure activities was influenced by several transacting personal and contextual conditions changing with time and ageing. Central conditions that emerged from the analysis included personal characteristics, having social and supportive networks, being dependent on others, having access to valued activities and contexts, being motivated to participate, and perceiving sufficient capacity to participate.

Conclusions: Long-term participation after stroke is possible despite impairments, but is influenced by a range of personal and environmental conditions. Stroke rehabilitation should be based on an awareness of this influence and address conditions that change with time and ageing during different phases after stroke.

Title: Longitudinal imaging of reading and naming recovery after stroke.

Citation: Aphasiology; Jul 2018; vol. 32 (no. 7); p. 839-854
Author(s): Long, Chartlien; Sebastian, Rajani; Faria, Andreia V.; Hillis, Argye E.

Background: Functional neuroimaging techniques can provide a unique window into the neural basis of language recovery after a stroke. The functional neuroimaging literature on post-stroke language recovery is complex; multiple factors such as the time post-stroke, degree of initial impairment, nature of the task, and lesion location and size influence recovery patterns. Some of these factors may not be applicable across different stroke participants, and therefore, influence recovery trajectories in vastly different manners across patients.

Aims: The aim of this paper is to examine longitudinal changes in brain activation patterns of reading and naming recovery in participants with posterior cerebral artery (PCA) strokes with varying degrees of initial language impairment.

Methods & Procedures: Five participants with PCA strokes and five healthy controls underwent language testing and functional MRI with a covert reading task and an overt picture-naming task. Stroke participants underwent language testing and scanning at the three time points: 2-5 weeks (T1, subacute phase), 4-7 months (T2, chronic phase), and 11-13 months (T3, chronic phase). Healthy controls underwent language testing and fMRI once.
Outcomes & Results: Language testing indicated that there were varying degrees of reading and naming recovery or decline from the subacute to the chronic phase. With regard to task-based fMRI, we found that for most participants, naming consistently activated a diffuse bilateral network of frontal, temporal, parietal, and occipital regions across the three time points. In contrast, for the reading task, functional activation across the three time points was more left lateralized with a right to left shift in peak activation from the subacute to the chronic phase.

Conclusions: These results indicate that the patterns of activation during language processing is highly dependent on the task and phase of recovery, and these results may have implications for neurally targeted non-invasive brain stimulation techniques.

Title: Management of tandem occlusions in acute ischemic stroke - intracranial versus extracranial first and extracranial stenting versus angioplasty alone: a systematic review and meta-analysis.

Citation: Journal of neurointerventional surgery; Aug 2018; vol. 10 (no. 8); p. 721-728

Author(s): Wilson, Mitchell P; Murad, Mohammad H; Krings, Timo; Pereira, Vitor M; O’Kelly, Cian; Rempel, Jeremy; Hilditch, Christopher A; Brinjikji, Waleed

Background: Optimal technical approaches of large-vessel anterior circulation acute ischemic strokes with concomitant extracranial internal carotid artery tandem occlusions is controversial. PURPOSE This systematic review and meta-analysis evaluates: the overall outcomes of patients with tandem occlusions treated with second-generation mechanical thrombectomy devices; differences in outcomes of extracranial versus intracranial first approaches; and differences in outcomes of extracranial stenting at time of procedure versus angioplasty alone.

Methods: MEDLINE, EMBASE, and the Web of Science was searched through September 2017 for studies evaluating patients presenting with acute tandem occlusions of the extracranial ICA and intracranial ICA, and/or proximal MCA treated with second-generation mechanical thrombectomy devices. Outcomes were pooled across studies using the random-effects model and expressed as cumulative incidence (event rate) and 95% CI.

Results: Thirty-three studies were included in analysis. Overall mRS≤0-2 at 90 days was 47% (95% CI 42% to 51%). No statistical difference was seen in 90-day mRS≤0-2 for patients treated with extracranial versus intracranial first approaches, 53% (95% CI 44% to 61%) vs 49% (95% CI 44% to 57%) (P=0.58). No statistical difference was seen in 90-day mRS≤0-2 for patients treated with extracranial stenting versus angioplasty alone, 49% (95% CI 42% to 56%) vs 49% (95% CI 33% to 65%) (P=0.39). No other statistical differences in outcome or safety were identified.

Conclusions: Nearly half of all tandem occlusion patients treated with mechanical thrombectomy have good neurological outcomes. No statistical differences in outcome are identified between extracranial first versus intracranial first approaches, nor extracranial stenting versus angioplasty alone.

Title: Mechanical thrombectomy for acute ischemic stroke with occlusion of the M2 segment of the middle cerebral artery: a meta-analysis.

Citation: Journal of neurointerventional surgery; Jul 2018; vol. 10 (no. 7); p. 620-624

Author(s): Saber, Hamidreza; Narayanan, Sandra; Palla, Mohan; Saver, Jeffrey L; Nogueira, Raul G; Yoo, Albert J; Sheth, Sunil A

Background: Endovascular thrombectomy has demonstrated benefit for patients with acute ischemic stroke from proximal large vessel occlusion. However, limited evidence is available
from recent randomized trials on the role of thrombectomy for M2 segment occlusions of the middle cerebral artery (MCA).

**Methods:** We conducted a systematic review and meta-analysis to investigate clinical and radiographic outcomes, rates of hemorrhagic complications, and mortality after M2 occlusion thrombectomy using modern devices, and compared these outcomes against patients with M1 occlusions. Recanalization was defined as Thrombolysis in Cerebral Infarction (TICI) 2b/3 or modified TICI 2b/3.

**Results:** A total of 12 studies with 1080 patients with M2 thrombectomy were included in our analysis. Functional independence (modified Rankin Scale 0-2) rate was 59% (95% CI 54% to 64%). Mortality and symptomatic intracranial hemorrhage rates were 16% (95% CI 11% to 23%) and 10% (95% CI 6% to 16%), respectively. Recanalization rates were 81% (95% CI 79% to 84%), and were equally comparable for stent-retriever versus aspiration (OR 1.05; 95% CI 0.91 to 1.21). Successful M2 recanalization was associated with greater rates of favorable outcome (OR 4.22; 95% CI 1.96 to 9.1) compared with poor M2 recanalization (TICI 0-2a). There was no significant difference in recanalization rates for M2 versus M1 thrombectomy (OR 1.05; 95% CI 0.77 to 1.42).

**Conclusions:** This meta-analysis suggests that mechanical thrombectomy for M2 occlusions that can be safely accessed is associated with high functional independence and recanalization rates, but may be associated with an increased risk of hemorrhage.

**Title:** Net clinical benefit of patent foramen ovale closure in patients with cryptogenic stroke: Meta-analysis and meta-regression of randomized trials.

**Citation:** International journal of cardiology; Sep 2018; vol. 266 ; p. 75-80

**Author(s):** Pasceri, Vincenzo; Pelliccia, Francesco; Bressi, Edoardo; Mantione, Ludmilla; Gaudio, Carlo; Speciale, Giulio; Mehran, Roxana; Dangas, George D; Patti, Giuseppe

**Background:** Controlled randomized trials (CRTs) comparing the efficacy of patent foramen ovale (PFO) closure and medical therapy in patients with cryptogenic stroke have yielded heterogeneous results. No data are available on the net clinical benefit with the two strategies.

**Methods:** We pooled data of 3440 patients enrolled in five CRTs, randomized to PFO closure (n = 1829) or medical therapy (n = 1611) and followed for a mean of 4.1 years.

**Results:** The net composite endpoint of stroke, major bleeding or atrial fibrillation (AF)/flutter was not different among PFO closure and medical therapy (OR 1.06; 95% CI 0.63-1.77; p = 0.83). PFO closure was associated with similar bleeding rates and with a significant 59% relative reduction of recurrent stroke versus medical therapy; in the intervention group this stroke prevention was counterbalanced by a significant 4.7-fold higher risk of AF/flutter. Meta-regression analysis showed that odds ratios for the net composite endpoint were related to prevalence of severe shunt at baseline (p = 0.002), percentage of procedural success (p = 0.002), stroke incidence in the medical therapy arm (p = 0.012) and to follow-up duration (p = 0.001).

**Conclusions:** This study-level meta-analysis of CRTs demonstrates that, compared to medical therapy, PFO closure prevents recurrent ischemic cerebral events, but increases the risk of AF/flutter in patients with cryptogenic stroke; as a result, the net clinical benefit with the two strategies was similar. Our results support an individualized therapeutic approach, tailored on the evaluation of the patient's risks (anatomical PFO risk, clinical risk of recurrent stroke, bleeding risk, and risk of AF).

**Title:** Non-invasive brain stimulation for fine motor improvement after stroke: a meta-analysis.

**Citation:** European journal of neurology; Aug 2018; vol. 25 (no. 8); p. 1017-1026
**Abstract:** The aim of this study was to determine whether non-invasive brain stimulation (NIBS) techniques improve fine motor performance in stroke. We searched PubMed, EMBASE, Web of Science, SciELO and OpenGrey for randomized clinical trials on NIBS for fine motor performance in stroke patients and healthy participants. We computed Hedges' g for active and sham groups, pooled data as random-effects models and performed sensitivity analysis on chronicity, montage, frequency of stimulation and risk of bias. Twenty-nine studies (351 patients and 152 healthy subjects) were reviewed. Effect sizes in stroke populations for transcranial direct current stimulation and repeated transcranial magnetic stimulation were 0.31 [95% confidence interval (CI), 0.08-0.55; P = 0.010; Tau2, 0.09; I2, 34%; Q, 18.23; P = 0.110] and 0.46 (95% CI, 0.00-0.92; P = 0.05; Tau2, 0.38; I2, 67%; Q, 30.45; P = 0.007). The effect size of non-dominant healthy hemisphere transcranial direct current stimulation on non-dominant hand function was 1.25 (95% CI, 0.09-2.41; P = 0.04; Tau2, 1.26; I2, 93%; Q, 40.27; P < 0.001). Our results show that NIBS is associated with gains in fine motor performance in chronic stroke patients and healthy subjects. This supports the effects of NIBS on motor learning and encourages investigation to optimize their effects in clinical and research settings.

**Title:** Palliative Care and Stroke: An Integrative Review of the Literature.

**Citation:** Journal of Hospice & Palliative Nursing; Aug 2018; vol. 20 (no. 4); p. 358-367

**Author(s):** Molidor, Stephanie; Overbaugh, Kristen J.; James, Deborah; White, Carole L.

**Abstract:** Stroke survivors often experience life-altering functional and cognitive changes and burdensome symptoms. Palliative care could provide additional support to improve outcomes of stroke patients and their families. The purpose of this review was to describe how palliative care is conceptualized and implemented within stroke care. An integrative review of the literature published between 1990 and 2016 using the terms "palliative care," "stroke," or "acute stroke" was conducted. Of the 363 articles identified, 44 were screened, 21 met inclusion criteria, and 2 additional articles were identified through reference list review, resulting in a final sample of 23 articles. Palliative care was predominantly understood as end-of-life care and was most commonly offered in acute stages when patients were expected to die. Patients, families, and providers reported challenges surrounding decision making, uncertainty regarding transitions to palliative care, and needs related to communication and physical and psychosocial support. The quality of the research was moderate to good but was limited by retrospective designs, reliability of data collection procedures and tools, recall bias, and generalizability. This review highlights gaps in access to palliative care throughout the illness trajectory and underscores the need for study of models that integrate palliative care into stroke care.

**Title:** Percutaneous patent foramen ovale closure for secondary stroke prevention: Network meta-analysis.

**Citation:** Neurology; Jul 2018; vol. 91 (no. 1); p. e8

**Author(s):** Tsivgoulis, Georgios; Katsanos, Aristeidis H; Mavridis, Dimitris; Frogoudaki, Alexandra; Vrettou, Agathi-Rosa; Ikonomidis, Ignatios; Parissis, John; Deftereos, Spyridon; Karapanayiotides, Theodore; Palaiodimou, Lina; Filippatou, Angeliki; Perren, Fabienne; Hadjigeorgiou, Georgios; Alexandrov, Andrei V

**Objective:** Current guidelines report no benefit for patent foramen ovale (PFO) closure compared to medical treatment in patients with cryptogenic ischemic stroke (IS) or TIA. Two recent randomized controlled clinical trials have challenged these recommendations.

**Methods:** We performed a systematic review and network meta-analysis of randomized controlled trials to estimate the safety and efficacy of closure compared to medical
treatment, and to compare available devices. We conducted pairwise meta-analyses for closure vs medical therapy, irrespective of the device used, and for each device vs medical therapy.

Results: Our literature search highlighted 6 studies. PFO occlusion was associated with reduced risk of recurrent IS (risk ratio [RR] 0.42, 95% confidence interval [CI] 0.20-0.91) and IS/TIA (RR 0.65, 95% CI 0.48-0.88) but with increased risk of new-onset atrial fibrillation (AF) (RR 4.59, 95% CI 2.01-10.45) compared to medical treatment. In indirect analyses, both Amplatzer (AMP) and GORE devices were found to be associated with a lower risk of new-onset AF compared to STARFlex (SFX) (RR 0.25, 95% CI 0.10-0.65 and RR 0.28, 95% CI 0.08-0.95). Moreover, AMP was found to be associated with a lower risk of recurrent IS/TIA events compared to the SFX device (RR 0.35, 95% CI 0.14-0.91). In the clustered ranking plot on the risk of IS against new-onset AF, GORE was comparable to AMP; however, on the risk of IS/TIA against new-onset AF, AMP appeared to be superior to the GORE device. In both ranking plots, SFX was highlighted as the worst option.

Conclusion: PFO closure is associated with reduced risk of recurrent IS or IS/TIA and with increased risk of new-onset AF.

Title: Personality traits and course of symptoms of depression and apathy after stroke: Results of the CASPER study.

Citation: Journal of Psychosomatic Research; Aug 2018; vol. 111 ; p. 69-75
Author(s): Douven, Elles; Schievink, Syenna H.J.; Verhey, Frans R.J.; Köhler, Sebastian; Aalten, Pauline; Staals, Julie; van Oostenbrugge, Robert J.; Wetzels-Meertens, Sascha

Objective: Post-stroke depression (PSD) and post-stroke apathy (PSA) are both associated with adverse outcome after stroke. This study aimed to examine whether personality traits predict the course of PSD and PSA.

Methods: In this prospective cohort study, 240 stroke patients completed the NEO Five Factor Inventory, Montgomery-Åsberg Depression Rating Scale, and Apathy Evaluation Scale at 3 months post-stroke. Neuropsychiatric assessment was repeated at 6- and 12-month follow-up after initial testing.

Results: Linear mixed models showed that high neuroticism scores were associated with higher depression levels at baseline, and this association remained stable at follow-up. High extraversion scores and high conscientiousness scores were associated with lower apathy levels at baseline. For neuroticism, a significant interaction with time was found, with higher neuroticism scores at baseline being associated with an increase in apathy scores from 6-month to 12-month follow-up. Prospective analyses showed that high extraversion predicted low apathy levels at 6-month and 12-month follow-up independent of its relations with baseline depression and apathy. High neuroticism predicted high apathy levels at 12-month follow-up, whereas high agreeableness and high openness predicted high apathy levels and low apathy levels, respectively, at 6-month follow-up. None of the personality traits predicted depression scores at follow-up.

Conclusion: Personality traits are associated with the development and sustainability of PSD and PSA. The traits associated with PSD and PSA were different, providing support for the independence of these constructs. The findings highlight the importance to take personality traits into account as a potential vulnerability factor for PSD and PSA.
Title: Poststroke psychosis: a systematic review.

Citation: Journal of neurology, neurosurgery, and psychiatry; Aug 2018; vol. 89 (no. 8); p. 879-885

Author(s): Stangeland, Helle; Orgeta, Vasiliki; Bell, Vaughan

Abstract: A preregistered systematic review of poststroke psychosis examining clinical characteristics, prevalence, diagnostic procedures, lesion location, treatments, risk factors and outcome. Neuropsychiatric outcomes following stroke are common and severely impact quality of life. No previous reviews have focused on poststroke psychosis despite clear clinical need. CINAHL, MEDLINE and PsychINFO were searched for studies on poststroke psychosis published between 1975 and 2016. Reviewers independently selected studies for inclusion, extracted data and rated study quality. Out of 2442 references, 76 met inclusion criteria. Average age for poststroke psychosis was 66.6 years with slightly more males than females affected. Delayed onset was common. Neurological presentation was typical for stroke, but a significant minority had otherwise 'silent strokes'. The most common psychosis was delusional disorder, followed by schizophrenia-like psychosis and mood disorder with psychotic features. Estimated delusion prevalence was 4.67% (95% CI 2.30% to 7.79%) and hallucinations 5.05% (95% CI 1.84% to 9.65%). Twelve-year incidence was 6.7%. No systematic treatment studies were found. Case studies frequently report symptom remission after antipsychotics, but serious concerns about under-representation of poor outcome remain. Lesions were typically right hemisphere, particularly frontal, temporal and parietal regions, and the right caudate nucleus. In general, poststroke psychosis was associated with poor functional outcomes and high mortality. Poor methodological quality of studies was a significant limitation. Psychosis considerably adds to illness burden of stroke. Delayed onset suggests a window for early intervention. Studies on the safety and efficacy of antipsychotics in this population are urgently needed.

Title: Prevalence of patent foramen ovale in cryptogenic transient ischaemic attack and non-disabling stroke at older ages: a population-based study, systematic review, and meta-analysis.

Citation: The Lancet. Neurology; Jul 2018; vol. 17 (no. 7); p. 609-617

Author(s): Mazzucco, Sara; Li, Linxin; Binney, Lucy; Rothwell, Peter M; Oxford Vascular Study Phenotyped Cohort

Background: Percutaneous closure of patent foramen ovale (PFO) has been shown to be superior to medical treatment alone for prevention of recurrent stroke after cryptogenic transient ischaemic attack or non-disabling stroke in patients aged 60 years or younger. The justification for trials in older patients with transient ischaemic attack or stroke depends on whether PFO is shown to be associated with cryptogenic events at older ages, for which existing evidence is conflicting, and on the population burden of PFO-associated events. Therefore, we did a population-based screening study using contrast-enhanced transcranial Doppler (bubble-TCD) to detect probable PFO as indicated by a right-to-left shunt (RLS); we also did a systematic review and meta-analysis to compare our results with previous studies.

Methods: In this population-based study, nested in the Oxford Vascular Study (OXVASC), we established the prevalence of any RLS, and of large RLS (>20 microbubbles), in consecutive patients attending a rapid-access transient ischaemic attack and stroke clinic, or at 1-month follow-up after stroke unit admission, with transient ischaemic attack or non-disabling ischaemic stroke, comparing cryptogenic events with those of known cause (according to Trial of Org 10172 in Acute Stroke Treatment [TOAST] criteria). We stratified participants by age, and extrapolated data to the UK population. We also did a systematic review of published studies of PFO prevalence (using transthoracic or transoesophageal
echocardiography or bubble-TCD) according to stroke subtype, which included older patients and reported age-specific results, and determined by meta-analysis (including the OXVASC data) the pooled odds ratio (95% CI) of finding PFO of any size in cryptogenic events compared with events of known cause, stratified by screening modality (transthoracic or transoesophageal echocardiography or bubble-TCD). The study protocol is registered with PROSPERO, number CRD42018087074. FINDINGS Among 572 consecutive patients with transient ischaemic attack or non-disabling stroke between Sept 1, 2014, and Oct 9, 2017 (439 [77%] patients aged >60 years, mean age 70·0 years [SD 13·7]), bubble-TCD was feasible in 523 patients (91%) of whom 397 were aged older than 60 years. Compared with those with transient ischaemic attack or stroke of known cause, patients with cryptogenic events had a higher prevalence of RLS overall (odds ratio [OR] 1·93, 95% CI 1·32-2·82; p=0·001), and in those aged older than 60 years (2·06, 1·32-3·23; p=0·001). When we pooled the OXVASC data with that from two previous smaller studies of bubble-TCD in patients aged 50 years or older, we found an association between RLS and cryptogenic events (OR 2·35, 95% CI 1·42-3·90; p=0·0009; pheterogeneity=0·15), which was consistent with the equivalent estimate from transoesophageal echocardiography studies (2·20, 1·15-4·22; p=0·02; pheterogeneity=0·02). No data on large RLS in patients with TOAST-defined cryptogenic events compared with other events were available from previous studies, but we found no evidence that the association was diminished in such cases. Of 41 patients with large RLS and cryptogenic transient ischaemic attack or non-disabling stroke in our study, 25 (61%) were aged older than 60 years, which extrapolates to 5951 patients per year in the UK (data from mid-2016).

**Interpretation:** Bubble-TCD was feasible in most older patients with transient ischaemic attack or non-disabling stroke, the association of RLS with cryptogenic events remained at older ages, and the population burden of PFO-associated events is substantial. Randomised trials of PFO closure at older ages are required and should be feasible.

**Funding:** National Institute for Health Research, Oxford Biomedical Research Centre, Wellcome Trust, and Wolfson Foundation.

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**Title:** Quality of life, anxiety, depression and burden among stroke caregivers: A longitudinal, observational multicentre study.

**Citation:** Journal of Advanced Nursing; Aug 2018; vol. 74 (no. 8); p. 1875-1887

**Author(s):** Pucciarelli, Gianluca; Ausili, Davide; Galbussera, Alessia Antonella; Rebora, Paola; Savini, Serenella; Simeone, Silvio; Alvaro, Rosaria; Vellone, Ercole

**Aim:** To longitudinally describe stroke caregivers’ quality of life, anxiety, depression and burden and to identify predictors of stroke caregivers’ quality of life, anxiety, depression and burden. Background: Caregivers have a key role in stroke survivor care and the first year of caregiving is the most challenging. To give tailored interventions, it is important to capture changes and identify predictors of caregiver quality of life, anxiety, depression and burden during the first year.

**Design:** A 12-month longitudinal study. Data were collected between June 2013–May 2016.

**Methods:** Changes in stroke caregiver quality of life, anxiety and depression and burden and their predictors were identified using linear mixed-effects models.

**Results:** The caregivers (N = 244) were 53 years old and mostly female. Caregiver quality of life did not change significantly over the 12 months, anxiety and depression decreased up to 9 months and caregiver burden decreased from baseline to 3 months, then increased up to 9 months. Higher caregiver quality of life was predicted by caregiver younger age, higher education, living with a stroke survivor, survivor older age and higher physical functioning; higher anxiety and depression were predicted by older caregiver age and younger survivor age; higher burden was predicted by caregiver male gender, the caregiver not living with survivor and survivor lower physical functioning.
Conclusion: The first 9 months of caregiving are particularly problematic for caregivers. The trajectories of the above variables and their predictors may be useful for policy makers, clinicians, investigators and educators to give better care to stroke caregivers and their survivors.

Title: Safety of Recanalization Therapy in Patients with Acute Ischemic Stroke Under Anticoagulation: A Systematic Review and Meta-Analysis.

Author(s): Liu, Mingsu; Zheng, Yang; Li, Guangqin

Citation: Journal of stroke and cerebrovascular diseases : the official journal of National Stroke Association; Jul 2018

Background: Intravenous thrombolysis treatment (IVT) and endovascular therapy (EVT) have been proved as fist-line beneficial option for eligible patients who have acute ischemic stroke (AIS) with major safety concern of symptomatic intracranial hemorrhage (sICH). Unfortunately, the emergency management of patients with AIS taking vitamin K antagonists and with international normalized ratio higher than 1.7 or taking new oral anticoagulants (NOACs) represents a great challenge. We aim to comprehensively determine the safety of EVT in patients under prior-stroke anticoagulants and IVT in patients under NOAC use.

Methods: Clinical researches published in the Embase, PubMed, and Cochrane Library electronic databases up to December 2017 were identified for analysis. Subgroup and sensitivity analyses were also conducted to evaluate the robustness of the conclusions.

Results: Overall, 9 studies involving 3885 patients met the inclusion criteria. The rate of sICH (risk ratio [RR] = .94, 95% CI = .61-1.47, P = .799), mortality (P = .495), and recanalization (P = .655) after EVT did not differ between patients under and those who were not under anticoagulants, although patients under anticoagulants were less likely to achieve good functional outcome (P < .001) than those who were not. Moreover, prior NOAC therapy was not significantly associated with increasing sICH in patients with AIS after IVT (RR = .79, 95% CI = .41-1.53, P = .492).

Conclusions: Patients under anticoagulation appear to be safe after EVT with relatively lower rate of good outcome; furthermore, prior NOAC therapy was not associated with an increasing sICH rate after IVT. This offered a practical information to select appropriate therapeutic strategies for patients under anticoagulation, although the level of evidence seems to be quite shaky.

Title: The efficacy and safety of pharmacological treatments for post-stroke aphasia.

Citation: CNS & neurological disorders drug targets; Jul 2018

Author(s): Zhang, Xiaoyan; Shu, Bohui; Zhang, Dongdong; Huang, Lina; Fu, Qizhi; Du, Ganqin

Background: Aphasia is a common complication after stroke , and traditional speech and language therapy (SLT) have a limited effect on post-stroke aphasia. An increasing number of controlled clinical trials on the efficacy of drugs in the treatment of post-stroke aphasia. However, there have been very few systematic reviews on the effectiveness and safety of pharmacological treatments in people with aphasia after stroke. Objective To evaluate the effectiveness and safety of pharmacological interventions for post- stroke aphasia.

Methods: The Cochrane Central Register of Controlled Trials (CENTRA), PubMed, Embase, Chinese Journal Full-text Database (CJFD), China Biology Medicine disc (CBMdisc), Wanfang Data and VIP Information System were retrieved for randomized controlled trials about pharmacological treatment of post-stroke aphasia. Literature screening depending on the inclusion and exclusion criteria, data extraction and
methodological quality assessment of the included studies was completed by two independent reviewers. Methodological quality was high according to the modified Jadad quality scale score of 4 to 7. RevMan 5.3 software was used to conduct meta-analysis of high-quality studies.

Results: Fifteen studies (578 participants) satisfied the eligibility criteria for this systematic review. Five trials (277 participants) assessed donepezil, four studies (124 participants) assessed memantine, three studies (72 participants) assessed bromocriptine, one trial (45 patients) evaluated galantamine, one record (21 patients) evaluated amphetamine, and one trial (39 patients) evaluated levodopa. The systematic review showed that donepezil had achieved remarkable results in AQ (SMD 0.82, 95% CI 0.48 ~1.17, P< 0.00001), repetition ability (SMD 0.81, 95% CI 0.57 ~1.06, P< 0.00001), naming ability (SMD 0.56, 95% CI 0.29 ~0.84, P< 0.00001), auditory comprehension (SMD 0.85, 95% CI 0.58 ~1.13, P< 0.00001) and oral expression (SMD 0.90, 95% CI 0.54 ~1.26, P< 0.00001). Memantine showed no pronounced improvement in auditory comprehension (SMD 0.35, 95% CI -0.05 ~0.74, P= 0.09), but AQ (SMD 0.57, 95% CI 0.09 ~1.06, P= 0.02), naming ability (SMD 0.81, 95% CI 0.38 ~1.25, P= 0.0002), spontaneous speech (SMD 0.76, 95% CI 0.39 ~1.13, P< 0.0001), and repetition ability (SMD 0.37, 95% CI 0.01 ~0.73, P= 0.04) showed pronounced improvement. Bromocriptine showed pronounced improvement in naming ability (SMD -0.20, 95% CI -0.67 ~0.26, P= 0.39), verbal fluency (SMD 0.02, 95% CI 0.53 ~0.56, P= 0.95), and repetition ability (SMD 0.29, 95% CI -0.23 ~0.81, P= 0.28). There is limited and inconclusive evidence for galantamine, amphetamine and levodopa.

Conclusions: Current evidence suggests that drugs can improve the prognosis of post-stroke aphasia, such as donepezil, memantine. Donepezil has a significant effect in improving the ability of auditory comprehension, naming, repetition and oral expression. Memantine has a significant effect in improving the ability of naming, spontaneous speech and repetition. Bromocriptine showed no significant improvement in the treatment of aphasia after stroke. The trial for galantamine, amphetamine and levodopa in the treatment of aphasia after stroke is limited and inconclusive.

Title: The physical environment and patients’ activities and care: A comparative case study at three newly built stroke units.

Citation: Journal of Advanced Nursing; Aug 2018; vol. 74 (no. 8); p. 1919-193

Author(s): Anåker, Anna; von Koch, Lena; Sjöstrand, Christina; Heylighen, Ann; Elf, Marie

Aim: To explore and compare the impact of the physical environment on patients’ activities and care at three newly built stroke units.

Background: Receiving care in a stroke unit instead of in a general ward reduces the odds of death, dependency and institutionalized care. In stroke units, the design of the physical environment should support evidence-based care. Studies on patients’ activities in relation to the design of the physical environment of stroke units are scarce. Design: This work is a comparative descriptive case study.

Method: Patients (N = 55) who had a confirmed diagnosis of stroke were recruited from three newly built stroke units in Sweden. The units were examined by non-participant observation using two types of data collection: behavioural mapping analysed with descriptive statistics and field note taking analysed with deductive content analysis. Data were collected from April 2013 - December 2015.

Results: The units differed in the patients’ levels of physical activity, the proportion of the day that patients spent with health professionals and family presence. Patients were more physically active in a unit with a combination of single and multi-bed room designs than in a unit with an entirely single-room design. Stroke units that were easy to navigate and offered variations in the physical environment had an impact on patients’ activities and care.
**Conclusions:** Patients’ activity levels and interactions appeared to vary with the design of the physical environments of stroke units. Stroke guidelines focused on health status assessments, avoidance of bed-rest and early rehabilitation require a supportive physical environment.

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