Question 40 evidence tables

Question 40: What is the effectiveness of extended rehabilitation at the end of formal therapy or treatment after stroke?

NB Any discrepancies between reviewers in evidence quality and comment were discussed at the corresponding evidence review meeting

SBP = systolic blood pressure, BP = blood pressure, DBP = diastolic blood pressure, IHD = ischaemic heart disease, BMI = body mass index, AF = atrial fibrillation, TEF = Treatment – Education– Follow-up, HADS = Hospital Anxiety and Depression Scale, FSS = Fatigue Severity Scale (FSS), CLCE-24 = Checklist for Cognitive and Emotional Consequences of Stroke, USER-P = Utrecht Scale for Evaluation of Rehabilitation-Participation, SA-SIP30 = Stroke-Adapted Sickness Impact Profile, ESD = early supported discharge, MMSE = mini mental state examination, NEADL = Nottingham Extended Activities of Daily Living Scale, EQ-5D-5L = EuroQol-5D-5L, SR = systematic review, MA = meta-analysis, RCT = randomised controlled trial, IPDMA = individual patient data meta-analysis, MDT = multidisciplinary team, PICO = patient/population, intervention, comparison and outcomes, OR = odds ratio, CI = confidence interval, QoL = quality of life, ADL = activities of daily living, OR = odds ratio, RR = relative risk, aOR = adjusted odds ratio, cOR = crude odds ratio, CI = confidence interval, RoB = risk of bias, I2 = heterogeneity statistic.

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
929	R. Appireddy et al (2019). Home Virtual Visits for Outpatient Follow-Up Stroke Care: Cross-Sectional Study. Journal of medical Internet research. 21: e13734.	Setting: stroke prevention clinic in Canada. Design: cohort study Participants: N=75 Average age (SD): 63.7(14.3) years. Male/ female: 50/25 Time post stroke: NR Stroke severity: NR Inclusion criteria: No cognitive issues, loss of communication abilities, physical deficits or loss of functional abilities, sensory or perceptual deficits, visual field deficits with functional implications. Participants needed to meet technical criteria.	Experimental eVisit intervention: - Aim: to replicate usual clinic visits remotely - content: discussion of test results, medication review, examination, treatment plan, Q&A - format: follow-up only - group/ individual: up to 6 more participants able to join - dose: single visit - delivered by: physician - delivered where: on secure web platform - delivered how: video conference Control intervention: not applicable	Measures and time points: - patient satisfaction (survey), comparing e-Vist experience with that of usual visits - wait time - hypothetical cost estimates (not measured):	Total eVisits: 75 Patient satisfaction: response rate 46%; (33/72): overall very positive. Wait time significantly less in eVisit (P<.001): - in-person: mean 78.36 (SD 50.54) days) - eVisit: mean 59.98 (SD 48.36) days Resources saved in eVisit: - median total time reduced: 80 (50-102) - total travel distance avoided :30.1 (11.2-82.2) km. Hypothetical costs saved: Patient out of pocket: median estimate Can $52.83 (31.26-94.53).	- Low quality pilot study at high risk of bias. Main limitations: - single cohort with a male-dominated, very selective sample of participants with minimal impairments and access to technology -data pertaining to single visit only. - patient satisfaction survey not validated, - limited questions and limited scope for expressing opinions. - cost data were estimated only.

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929	R. Appireddy et al (2019). Home Virtual Visits for Outpatient Follow-Up Stroke Care: Cross-Sectional Study. Journal of medical Internet research. 21: e13734.	Setting: 'primary care/specialty disease clinic' Southeastern Ontario (rural area) Design: non-randomised feasibility pilot and integrated evaluation & economic analysis Subjects: n=75 mean age (SD) age 63.7(14.3); median age (IQR) and 65 years (56-73.5) male: 67% (50/75) under age 65: 51% (38/75) aged 65-75: 32% (24/75) over age 75: 17% (13/75)	eVisit: secure, 2-way digital communication between health providers and patients; may include emails, short message service text messaging, and videoconferencing using smartphones & tablets; discussion of test results, examination, care planning	Patient satisfaction (bespoke questionnaire) Economic Analysis	Shorter wait for an appointment by eVisit versus in-person (mean 59.98 [SD 48.36] days vs mean 78.36 [SD 50.54] days; P<.001) eVisit was shorter to deliver 10 min (average) High degree of patient satisfaction Travel distance avoided: 30.1 km (11.2-82.2). Estimated total savings for patients per eVisit: Can $52.83 (31.26-94.53)	**N/A**

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
930	B. Boden-Albala et al (2019). Efficacy of a Discharge Educational Strategy vs Standard Discharge Care on Reduction of Vascular Risk in Patients with Stroke and Transient Ischemic Attack: The DESERVE Randomized Clinical Trial. JAMA Neurology. 76. 20-27.	Setting: All studies took place in US New York medical centres during hospitalisation or emergency dept visits. Design: Randomised clinical trial with 1 year follow up Participants: 1083 eligible patients identified. 256 Declined to participate. 275 were excluded. Multi-ethnic cohort of patients. Total N=552. 51% women Mean age – 64.61 years, 33% Hispanic, 27% non-Hispanic White, 33% non-Hispanic Black	The Discharge Educational Strategies for Reduction of Vascular Events (DESERVE) is a skills based intervention, culturally tailored discharge programme with follow up calls delivered by a community health coordinator with the intervention developed using a community engagement approach. Stratified by language and site into intervention or usual care groups. Intervention groups N=274 v 278 usual care received interactive educational session with community health coordinator + a patient paced workbook and video emphasising skill base. Intervention group also received follow up calls from coordinator at 72 hrs, 1 month and 3 months to enhance strategies. Usual care group received standardised care along with American Heart association Stroke Pamphlets.	Systolic blood pressure reduction at 12 month post discharge in patients with stroke and TIA. Measure: Baseline, 6 months and 12 months post discharge used vascular baseline metrics Baseline BP measured 3 times up to 48hrs post stroke	Mean reduction in SBP between baseline and 12 months was 7.0mm HG among intervention and 4.3mm HG among usual care however in adjusted models no significant difference in systolic blood pressure reduction was detected between intervention and usual care groups. However among 1 arm of the intervention group (Hispanic Individuals) had a clinically and statically significant 9.9mm Hg-greater mean systolic BP reduction in comparison to the usual care group. No other arms showed any significant difference between usual care group. At 12 month follow up N=13 intervention group and N=14 in usual care group could not be reached to measure BP	+ Acceptable quality Limitations were the usual care design may not be consistent to real-life usual care given that for the purpose of this research all usual care participants were given health literate and linguistically appropriate educational materials. This enhancement of usual care may have attenuated the effect of the intervention. Secondly, in person follow up BP measurements and for some had to rely on Physician records or self-reporting BP home measurements. These measurements may not have been taken using the same standardised instruments or procedures.

932	A. L. Irewall et al (2015). Nurse-led, telephone-based, secondary preventive follow-up after stroke or transient ischemic attack improves blood pressure and LDL cholesterol: Results from the first 12 months of the randomized, controlled NAILED stroke risk factor trial. PLoS ONE. 10. e0139997.	Setting: 1 regional hospital in Sweden. Design: open, population-based, randomized controlled trial with two parallel groups Participants recruited: N=537 (Intervention: N=266; Control: N=271). Target sample size: N=200 per group Average age: 70.8 (±10.7) years M/F: 57%/43% Stroke severity: majority had 'slight disability' or less severe stroke Inclusion criteria included: - stroke or TIA - physically and mentally capable of communicating by telephone Exclusion criteria: - aphasia - impaired hearing - cognitive impairment - severe disease	Experimental intervention: - aim: secondary stroke prevention. - content and format: lifestyle counselling with review of tests and (self)reports on BP, blood lipids, medication adherence, physical activity and other health behaviours related to stroke risk factors. - dose: not protocolised - delivered by: nurses - delivered where and how: telephone. - delivered when: 1 month after discharge, repeated tests within 4 weeks and if needed, medication was adjusted. The same routine, with an Hb1C test added, repeated at 12, 24, 36 months. - delivered in addition to the control intervention Control intervention: - standard information about stroke and risk factors , during hospitalization. offered a follow-up visit to a stroke nurse and an outpatient follow-up according to usual care	Measures and time points: Primary outcome: Seated systolic blood pressure (SBP) at 36 months. Reported here: mean difference in seated SBP between the two groups at 12 months post-discharge. Secondary outcomes: - mean between-group differences in diastolic blood pressure (DBP) and LDL-C**, - differences in the proportion of patients who reached the target values for each measure, - changes in SBP, DBP, and LDL-C between baseline and 12 months within each group . ** The LDL-C analyses did not include participants with haemorrhagic stroke. Assessors not blinded	Participants included in 12-month analysis: N=484/537 (Intervention: N=241; Control: N=243). Main findings: compared to the control group, the experimental group demonstrated at 12 months: - Adjusted difference (95% CI) SBP (mmHg), reduction of mean (± SD) 3.3 (0.3–6.3) - DBP (mmHg) reduction of mean (± SD) 2.3 (0.5–4.2) - LDL-C (mmol/L) reduction of mean (± SD) 0.3 (0.1–0.4) - larger proportion of the intervention group reached treatment goals for SBP (68.5% vs. 56.8%, p = 0.008), LDL-C (69.7%vs. 50.4%, p < 0.001). - effect on physical activity: NR [Subgroup analysis: in participants whose values were above the targets at baseline, the intervention resulted in mean SBP and LDL-C levels of 8.0 mmHg and 0.6 mmol/L lower than	+ Acceptable Main limitations: - unrepresentative sample; most participants had slight disability (or less); those with cognitive/ communication difficulties were excluded - assessors not blinded - physical activity (duration/week) was self-reported - compliance with medication was self-reported. - only those with complete outcome data included in the analysis

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					in the control group, resp.]	
932	A. L. Irewall et al (2015). Nurse-led, telephone-based, secondary preventive follow-up after stroke or transient ischemic attack improves blood pressure and LDL cholesterol: Results from the first 12 months of the randomized, controlled NAILED stroke risk factor trial. PLoS ONE. 10. e0139997.	People admitted to a hospital in a rural area in central Sweden with acute stroke or TIA Exclusion criteria – participating in other trials, aphasic, cognitive impairment, impaired hearing or severe/terminal disease Patients randomly assigned to intervention (n=266) or control group (n=271) using computer generated process	Intervention Group: Telephone based lifestyle counselling and assessment of pharmacological treatment with adjustment to treatment if baseline levels not met (in consultation with physician) This process was repeated at 4 weeks if necessary Control Group: usual secondary preventative follow up with BP and LDL-C results forwarded to GP for assessment	SBP, DBP and LDL-C recorded at baseline (1 month post discharge) and at 12 months	At 12 months the mean SBP & DBP had decreased significantly in the intervention group with no significant change in the control group. LDL-C decreased in intervention group but increased in control group, 69.7% of control group reached target, whilst 50.4% of control group did. No differences for those who were below the target values at baseline in either group	**+** Acceptable Patients randomised into cohorts using computer randomisation but not blinded to participants, study team or caregiver

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
933	L. Irewall at al (2019). Nurse-led, telephone-based secondary preventive follow-up benefits stroke/TIA patients with low education: A randomized controlled trial sub-study. Trials. 20. 52.	See . Irewall et al. (2015) Post-hoc analysis of 12-month outcome data. Participants recruited: N=871 (Intervention: N=433; Control: N=438). Target sample size: N=200 per group Average age: 70.7 (SD 10.6) years M/F: 58.9%/ 41.1% Stroke severity: minority had 'moderate disability' or more severe stroke	See . Irewall et al. (2015)	Measures and time points: Assessors not blinded	Participants included: N=771 (Intervention: N=383; Control: N=388). Main findings at 12 months: Intervention group: - SBP and DBP improved significantly, regardless of education level. - LDL-C did not change in those with high education, but reduced significantly in those with low education (−0.3mmol/L, 95% CI −0.2 to −0.4) Control group: - SBP improved significantly in those with high education (> 10 years) (−2.5mm Hg, 95% CI −0.2 to −4.8), but did not change in those with low education. LDL-C did not change in those with high education, and increased significantly in those with low education (0.2mmol/L, 95% CI 0.1 to 0.3).	See . Irewall et al. (2015)

933	L. Irewall at al (2019). Nurse-led, telephone-based secondary preventive follow-up benefits stroke/TIA patients with low education: A randomized controlled trial sub-study. Trials. 20. 52.	Setting: Österund Hospital, Jämtland, Sweden. Design: open, population based, RCT Participants (recruited from the NAILED stroke risk factor trial who remained in trial and had measurement data from the 12 month follow-up.: N= 771 (treatment group N= 383) (control group N= 388) Trial inclusion period: January 1st 2010-December 31st 2013. Inclusion criteria: admitted to Osterund Hospital with stroke or TIA (not subarachnoid haemorrhage). Physically and cognitively able to participate and provide informed consent. Exclusion criteria: participation in concurrent trials, unable to participate because of impaired hearing, aphasia, cognitive impairment, severe/often terminal disease.	Following 1:1 random allocation, stratified for sex and degree of disability (mRS). Treatment group (N=383) underwent nurse led, telephone based follow-up. All participants were telephoned at (1) 1 month after hospital discharge and (2) 12 months after hospital discharge. Before each follow up occasion, participants had BP measured and a blood sample for lipids taken at the closest health facility. Intervention follow-up included: (i) information about measurement results, (ii) lifestyle counselling eg. physical activity, diet and smoking cessation, (iii) assessment of pharmacological treatment. Assessment of lipid lowering treatment was limited to those with ischaemic stroke/TIA. Participants who did not reach treatment targets for BP (<140/90mm Hg) or LDL-C (<2.5/1.8 mmol/L) underwent pharmacological titration with repeated measurement/adjustment every 4 weeks until target or no further improvement could be reached. *change to local guidelines for patients with diabetes mellitus who had 1 month follow-up after March 31st 2013, treatment target (LDL-C < 1.8 mmol/L)	Primary outcome: mean difference in systolic blood pressure between participants with high and low education 12 months after hospital discharge. Secondary outcomes: mean differences between diastolic blood pressure and LDL-C levels between education group at 12 months and changes in SBP, DBP and LDL-C levels between baseline and 12 months within each education group. BP – calculated from sitting position after 5 mins of rest. LDL-C – calculated from serum concentrations of cholesterol and fasting triglycerides based on Friedewald formula. Patient characteristics at baseline; age, education level, functional level according to mRS, cardiovascular risk factors, medical history, in-hospital via patient interviews and review of medical records. Height/Weight to calculate BMI.	Baseline characteristics: Mean age: 70.7 years. N= 317 (41%) were women. Stroke was qualifying event for (61%) compared to TIA (39%). 50.3 % had a low level of formal education. Previous IHD amongst men (14.8 % P<0.001) was only significant difference in characteristics at baseline. Participants who did not complete the 12 month follow-up trial (N=100 who dropped out from randomization stage across both the intervention group (N=50) and control group (N=50) were older, more commonly female, lower BMI, higher occurrence of AF, higher proportion had MRS score of >2 and lower level of education. High education level – decreased with increasing age for both men and women. Participants with low	Large sample size, randomised, limited participants dropped out of study. Authors acknowledge that populations/setting of study and results may differ when replicated in other places. Education ratings are not based on validated standard or set in relation to age. Standard care delivered in the control group was vague and may have varied in content between individuals accessing this. Follow-up care is largely determined by self-initiation and this this favours those with higher education. The control group could thus be subject to some degree of variability and bias depending on how much was self-initiated. Intention to treat analysis was discussed. Further studies for beyond 12 month follow-up are required and for other socioeconomic groups.

			Control group (N=388) Follow-up in accordance with local standard procedures eg. within primary health care. Telephone contact did not include lifestyle counselling or changes to pharmacological treatment. BP and LDL-C measurement results were forwarded to patient's GP for assessment. Patients are not routinely caked for regular control of BP/blood lipids unless they are diabetic. Medical prescriptions are renewed on patient request and they can book a voluntary session to discuss secondary preventative measures. Many can also drop in during open hours to carry out self-measured BP check-up with results later reviewed by nurse/physician.	Dichotomized classification of education level. LOW – no more than 10 years of formal education. HIGH – completion of more than 10 years of formal education. Qualifying events, prior vascular events, comorbid conditions were based on diagnoses made by clinical physician. Stroke included ischaemic and haemorrhagic events but not subarachnoid haemorrhage. Previous IHD was defined by acute myocardial infarction, percutaneous coronary intervention or coronary bypass grafting or combination.	education were older than patients with high education (mean age 74 v's 67) Low education level – more likely to qualify for study due to stroke, and a higher percentage had a mRS score of at least 3. Baseline SBP and LDL-C at 1 month post hospital discharge did not differ according to education level. Treatment with antihypertensive was more common amongst participants with low education. At 12 months for the control group: participants with low education who were not more than 70 years old had higher systolic BP than controls with higher education of the same age (Mean difference 4.2 mm HG, CI 0.8to 7.6). LDL-C at 12 months did not differ according to education level regardless of age. There was an association between low education and an	

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					increase in LDL-C between 1-12 months (Mean 0.2, CI: 0.1 to 0.3) At 12 months for the treatment group, SBP and DBP improved in the treatment group by 12 months regardless of education. There was an association between low education and lower LDL-C at 12 month for those patients who were not more than 70 years old. (Mean 0.2. CI: 0.1 to 0.4) There was an association between low education and a reduction in LDL-C between 1-12 months. (Mean -0.3. CI: -0.2 to -0.4) No significant improvement in LDL-C during 12 months after stroke among highly educated participants regardless of follow-up group.	

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
934	A. Kao et al (2020). Do clinical nurse specialist led stroke follow-up clinics reduce post-stroke hospital readmissions and recurrent vascular events? Internal Medicine Journal. 50. 1202-1207.	Setting: one regional hospital in New Zealand Design: single-centre retrospective sequential comparison of records of a hospital database, pre- and post-establishment of a clinic. Participants: N= 603 (Pre-clinic N=288; Post-clinic N=315) Target sample size: N/A Average age: 73 years Stroke severity: NR as such.	Experimental intervention: - aim: secondary stroke prevention - content: discussion of test results, medication compliance, modifiable risk factors, post-stroke recovery, need for further rehabilitation - format: discussion - dose: NR - delivered by: clinical nurse specialist - delivered where: outpatient department - delivered how: follow-up phone calls and face-to-face clinical review Control intervention: Absence of the clinic.	Measures and time points: Primary outcome: 1-year hospital readmission rate Secondary outcomes: - adherence to medication prescription as per guidelines - composite 1-year rate of all recurrent vascular events	N=603 records included (Pre-clinic N=288; Post-clinic N=315). Median follow-up time 85 days (IQR 63–98.5). Main findings: - no difference in 1-year readmission rate (adjusted odds ratio (aOR) = 1.14; 95% CI, 0.7–1.89; P = 0.583), - no difference in 1-year recurrent composite vascular events (aOR = 1.56; 95% CI, 0.89–2.9; P = 0.159). no difference in adherence to medication prescription ((OR 1.14 (0.60–2.17); P = 0.692).	Low quality (audit) at high risk of bias: Main limitations: - single centre - non-randomised design - intervention not described in sufficient detail to enable replication - unclear how medication adherence was assessed.

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934	A. Kao et al (2020). Do clinical nurse specialist led stroke follow-up clinics reduce post-stroke hospital readmissions and recurrent vascular events? Internal Medicine Journal. 50. 1202-1207.	Setting: Wellington Regional Hospital, New Zealand Design: Single-centre retrospective sequential comparison Subjects: Individuals >16 years of age admitted to hospital WRH with ischaemic or haemorrhagic stroke or unspecified stroke (2012 before the Nurse Specialist follow-up clinic and the year after 2014).	Clinical Nurse specialist follow-up clinic. Details of the intervention by this service was identified as: Routine contact including follow-up phone calls and face-to-face clinical review initiated 3 months after discharge.	Primary Outcome: *12 month hospital readmission rate Secondary Outcomes: *Composite 1 year recurrent vascular event rate including stroke, TIA, MI and all cause mortality *Guideline adherence for surgical and pharmacological secondary prevention	1-year readmission rate non-significant Adjusted odds ratio (aOR) = 1.14; 95% CI, 0.7–1.89; P = 0.583) Recurrent composite vascular events and death at 1 year non-significant. (aOR = 1.56; 95% CI, 0.89–2.9; P = 0.159). No significant difference in the likelihood of implementation of best medical ther-apy (aOR 1.14 (0.60–2.17); P = 0.692). Pre-specified sub-group analysis of clinic attendance identified a significant difference in implementation of best medical ther-apy (aOR 2.66 (1.19–5.94); P = 0.017),	+ Case controlled: Acceptable Concerns relating to retrospective data collection and no direct comparison between cohort groups. Confounders however are adjusted for in the analysis.

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
935	J. Ogren et al (2018). Long-term, telephone-based follow-up after stroke and TIA improves risk factors: 36-month results from the randomized controlled NAILED stroke risk factor trial. BMC Neurology. 18. 153.	See . Irewall et al. (2015): follow-up reporting 36-month outcomes. Participants recruited: N=871 (Intervention: N=433; Control: N=438). Target sample size: N=200 per group Average age: 69.9 years M/F: 59.2%/ 40.8% Stroke severity: minority had 'moderate disability' or more severe stroke	See . Irewall et al. (2015)	See . Irewall et al. (2015) Time point: 36 months Assessors not blinded	Participants included: N=660/871 (Intervention: N=320; Control: N=340). Main findings: compared to those in the control group, those in the experimental group demonstrated at 36 months: - SBP reduction of mean 6.1 mmHg (95% CI 3.6–8.6, $p < 0.001$) - DBP reduction of mean 3.4 mmHg (95% CI 1.8–5.1, $p < 0.001$) - mean LDL-C reduction of mean (± SD) 0.3 mmol/L (95% CI 0.2–0.5, $p < 0.001$) - A larger proportion of the intervention group reached the treatment goal for BP (systolic: 79.4% vs. 55.3%, $p < 0.001$; diastolic: 90.3% vs. 77.9%, $p < 0.001$), LDL-C (69.3% vs. 48.9%, $p < 0.001$.	See . Irewall et al. (2015)

935	J. Ogren et al (2018). Long-term, telephone-based follow-up after stroke and TIA improves risk factors: 36-month results from the randomized controlled NAILED stroke risk factor trial. BMC Neurology. 18. 153.	Setting: post-discharge, only hospital in the county of Jämtland Sweden Design: RCT Subjects: intracerebral hematoma (ICH), ischemic stroke (IS) or TIA able to participate in a telephone-based follow-up and sign informed, written consent. Patients with aphasia, impaired hearing, cognitive impairment, or severe, often terminal disease, were excluded.	NAILED: nurse-based telemedicine intervention - review of medical treatment, including titration of medicine (BP and lipids)	at 36 months Blood pressure (seated) Blood lipids Mortality	f 871 randomized patients, 660 completed 36-month follow-up and were included in the analysis (mean age: 69.6 years, 40.8% women, 58.6% with IS, 3.5% with ICH, and 37.9% with TIA) Blood pressure (seated) mean adjusted SBP: Intervention group 128.1 mmHg (95% CI 125.8–130.5); control group 134.2 mmHg (95% CI 131.8–136.6) Between groups: a difference of 6.1 mmHg (95% CI 3.6–8.6, p < 0.001) Decreases compared to 1-month measurements: Intervention group 8.1 mmHg (95% CI 5.8–10.3; Control group 2.3 mmHg (95% CI 0.1–4.4) mean adjusted DBP: intervention group: 75.3 mmHg (95% CI 73.8–76.9); control group 78.8 mmHg (95% CI 77.2–80.3) Between group Difference 3.4 mmHg (95% CI 1.8–5.1, p < 0.001)	**-/0** Low quality – unacceptable/reject Poor quality randomisation; lack of blinding; lack of detail re BP measurement protocol (were staff at the various locations trained? Equipment calibrated? no ITT analysis

					Decreased between 1 and 36 months: Intervention 4.4 (mean) mmHg (95% CI 2.9–5.8); Control 0.2 mmHg (95% CI -1.0–1.5) Blood lipids mean adjusted LDL-C: intervention 2.2 mmol/L (95% CI 2.1–2.4, 86.5 mg/dL); control 2.5 mmol/L (95% CI 2.4–2.7, 98.1 mg/ dL), a mean difference of 0.3 mmol/L (95% CI 0.2–0.5, p < 0.001). decrease in the intervention group 0.2 mmol/L (95% CI 0.1–0.3); significant increase of 0.1 mmol/L (95% CI 0.0–0.2) in the control group Mortality 99 patients died by 36-month follow-up; 21/ 55 deaths in the intervention group and 17/ 44 deaths in the control group were cardiovascular-related The groups did not differ significantly re proportions of cardiovascular or all-	

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					cause mortality (p = 0.51 and p = 0.24)	
936	S. Sillau et al (2020). Relationship between early follow-up and readmission within 30 and 90 days after ischemic stroke. Neurology. 94. e1249-e1258.	Setting: US Design: retrospective cohort study of patients discharged home following stroke diagnosis. Records taken from a large database of insured Americans aged 18-89 years. Participants: N=28,811 records, of which 14,630 people were discharged home after acute stroke diagnosis. Target sample size: N/A Average age: mean of full data set approx. 63 years Stroke severity: Stroke Administrative Severity Index reported.	Experimental intervention (i.e. primary care or neurologist follow-up) - aim: NR - content: NR - format: NR - dose: NR - delivered by: either primary care physician or neurologist. - delivered where: outpatient setting - delivered how: NR Control intervention: N/A	Measures and time points: all-cause readmission to hospital within 30 and 90 days	N=14,630 records of patients discharged home (selected for this guideline). Main findings: - Primary care follow-up was associated with a 16% reduced in 30-day readmission rate (hazard ratio [HR] 0.84, 95% CI 0.72–0.98). - Primary care follow-up before 90 days did not reach significance (HR 0.92, 95% CI 0.83–1.03). Neurology follow-up was not associated with reduced readmissions within 30 days (HR 1.05, 95% CI 0.78–1.41, p = 1.00) or 90 days (HR 1.00, 95% CI 0.83–1.20, p=1.00).	Low quality study at high risk of bias. Main limitations: - based on retrospective analysis of a large commercial database, involving a population of insured Americans. No details about the actual 'follow up' interventions provided, hence these could not be replicated.

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
936	M. Leppert, S. Sillau et al (2020). Relationship between early follow-up and readmission within 30 and 90 days after ischemic stroke. Neurology. 94. e1249-e1258.	Setting: Primary care or neurology services following discharge Design: retrospective cohort study; regression models adjusted for demographics, comorbid conditions and stroke severity. Subjects: N=14,630 patients (18-89 years) who were discharged home after acute ischemic stroke, identified by ICD-9 and ICD-10 codes 2009-2015 on US Health Insurance claims database	Primary care or neurology follow-up initiated in the first 30 days and 90 days following discharge	Primary outcome was all-cause 30- and 90-day readmissions after acute ischemic stroke admission.	By 30 days, 59.3% had a primary care visit, and 24.4% had a neurology visit. Primary care follow-up was associated with reduced 30-day readmissions (adjusted hazard ratio [aHR] 0.84, 95% confidence interval [CI] 0.72–0.98). Primary care follow-up before 90 days did not reach significance (aHR 0.92, 95% CI 0.83–1.03). Neurology follow-up was not associated with reduced readmissions within 30 or 90 days (HR 1.05, 95% CI; HR 1.00, 95% CI, respectively).	+ Cohort study:Acceptable Large numbers, concern with data accuracy in an insurance claims database

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
937	T. Tang et al (2017). Impact of the disease management model of treatment-education-follow-up" on anticoagulant therapy in patients with stroke and atrial fibrillation". Biomedical Research (India). 28. 7195-7201.	Setting: number of hospitals (NR) in China. Design: multicenter, prospective controlled clinical cohort study Participants: Intervention: N=178; Control: N=25. Target sample size: NR Average age: most >75 years Time post stroke: NR Stroke severity: NR Inclusion criteria included: 1) acute cerebral infarction or TIA; 2) ECG evidence of AF 3) agreement to receive warfarin.	Experimental intervention: - aim: to promote anti-coagulant therapy amongst patients with stroke and AF. - content: warfarin plus stroke prevention and anticoagulant therapy handbook - format: 'Treatment – Education– Follow-up' (TEF) - dose: NR - delivered by: Masters, PhDs, clinical pharmacists, trained nurses. - delivered where and how: outpatient follow-up, telephone or text alerts, medication adjustment, health education, management of patient needs. - Delivered when: during hospitalisation and after discharge Control intervention: - content: warfarin and 'simple education'; no other intervention or education during hospitalisation.	Measures and time points: 1) Warfarin anticoagulant compliance, endpoint events, international normalized ratio monitoring rate and standard achieving rate, patients' knowledge level (bespoke questionnaire); 2) effectiveness indicators: ischemic event recurrence, 3) safety indicators: haemorrhagic events 4) patients' compliance to anticoagulant therapy (Morisky Medication Adherence Scale (Chinese version)) Time points: unclear; mean follow-up duration was 1.5 y Assessed by: NR	Participants included: Intervention: N=178; Control: N=25. Main findings: compared to those in the control group, those in the TEF group demonstrated: - Greater knowledge of medication (P<0.01) - Greater self-reported medication compliance (84.5% vs. 56%, P<0.05) - Greater rate of achieving international normalized ratio standard (2.0-3.0) (55.2% vs. 28%; P<0.05) - Fewer thrombus events (4.0% vs. 16%; P<0.05).	- Low quality cohort study at high risk of bias. Main limitations: - very limited description of the study population (potential confounders unclear) - little information on the intervention (limiting replication) - no randomisation - unclear if the control group intervention would be deemed ethical in the UK. - reasons for drop-out not reported - assessor blinding not reported medication adherence was self-reported

937	T. Tang et al (2017). Impact of the disease management model of treatment-education-follow-up" on anticoagulant therapy in patients with stroke and atrial fibrillation". Biomedical Research (India). 28. 7195-7201.	Setting: All studies were undertaken inn China Design: Controlled Clinical Cohort Study – multicentre. Participants: All participants enrolled were admitted as a result of acute ischemic stroke/TIA combined with AF. 7745 participants (Treatment group N=3933, Control group N= 3812) Of intervention group participants 630 had AF with 178 receiving warfarin and 5 dabigatran N=183 Of Control Group participants, 478 had AF with 25 receiving warfarin and 3 receiving dabigatran More men than women aged between 39-89year	Compare and observe the impact of the disease management model of TEF 'Treatment Education Follow-Up' on anticoagulant therapy on patients with stroke and AF. Intervention Group TEF involved educating patients and their families on anticoagulation therapy by providing them with S-AF prevention and anticoagulant handbooks along with regular post discharge telephone follow up and outpatient observation. Control group received only simple education. Mean follow up duration – 1.5years 8 item Morisky medication adherence scale scores, and anticoagulant knowledge questionnaire scores were compared between 2 groups.	Measures: Compliance measurement - Morisky Medication Adherence Scale Knowledge measurement - knowledge questionnaire scores Anticoagulant therapy upon discharge Measured persistence rate of long-term anticoagulant therapy, international normalised ratio compliance rate, and recurrence rate in thrombotic events	Compliance: Treatment group 84.5% v 56% of control group insisted on taking warfarin at 1.5 year follow up thus compliance was higher in the treatment group with statistically significance differences in in the ratios for achieving the INR standard and recurrent thromboembolic events between the 2 groups however no statistically significant difference in the rations between both in monthly monitoring of INR more than once and bleeding events. Treatment group 58% (good compliance) and 16.7% (low compliance) versus 36% and 48% respectively in control group. Rated knowledge was also favourable to the treatment group with 89.7% (treatment group) v 64% control group having improved rate of knowing on purposes of anticoagulant therapy.	The use of self-assessment scores to measure and no self comparison of anticoagulant therapy in both groups before an after treatment being performed is a significant limitation. It was also noted that as this was multi centre study, anticoagulant therapy efficacy compliance of the 2 groups in different hospitals significantly varied and no further stratification analysis was performed. It was also noted that the knowledge questionnaire on warfarin anticoagulant therapy was self-designed on the basis of relevant literature.

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
938	D. P. J. Verberne et al (2020). Nurse-led stroke aftercare addressing long-term psychosocial outcome: a comparison to care-as-usual. Disability and rehabilitation. 01-Sep.	Setting: One primary care centre in The Netherlands. Design: Comparative effectiveness research design comparing a prospective stroke aftercare cohort with usual care Participants: Intervention: N=87; Control: N=363. Target sample size: N/A Average age: around 66 years Stroke severity: most had minor stroke symptoms Stroke aftercare Inclusion criteria included: - admitted to hospital with stroke or TIA - discharged home or to rehabilitation care Exclusion criteria included: - discharged to a nursing home - insufficient command of language to complete questionnaires - no legal competency.	Experimental intervention: - aims: (1) signal potential problems in daily life re. physical, cognitive, emotional symptoms, (2) provide support and psychoeducation (3) refer to further specialized healthcare professionals when needed. - content: NR - format: face-face - dose: < 45 min. per session. Number of sessions depending on nurse's judgement. - delivered by: nurses - delivered where: Primary Care center - delivered when: at six months after hospital discharge. - in addition to the control intervention (usual care) Control intervention: a consultation at the outpatient clinic of neurology at 6-8 weeks after discharge, and regular follow-up for secondary prevention, comparable to the stroke aftercare group. No further follow-up	Measures and time points: - anxiety and depression (Hospital Anxiety and Depression Scale (HADS)) - fatigue: Fatigue Severity Scale (FSS) - cognitive and emotional issues: Checklist for Cognitive and Emotional Consequences of Stroke (CLCE-24) - social participation (restrictions domain of the Utrecht Scale for Evaluation of Rehabilitation-Participation (USER-P) - impact of stroke on daily life (Stroke-Adapted Sickness Impact Profile (SA-SIP30)) - Quality of life (EuroQol-5D-3L (EQ-5D-3L) and EuroQol-5D-5L (EQ-5D-5L) Assessed at baseline and 6 months. Assessors not blinded	Participants included: N=293 (Intervention: N=87; Control: N=363). Main findings: compared to those in the control group, those in the experimental group demonstrated: - anxiety and depression: no significant difference - fatigue: NR - cognitive and emotional issues: NR - social participation: significant between-group difference: no change in the experimental whilst a significant improvement in the control group - impact of stroke on daily life: NR - quality of life: no difference.	Low quality study Main limitations: - not a representative sample; most had only minor symptoms - no randomisation - stroke aftercare intervention not described (hence could not be replicated) - Assessors not blinded - Selected outcomes reported only Between-group differences not reported clearly

938	D. P. J. Verberne et al (2020). Nurse-led stroke aftercare addressing long-term psychosocial outcome: a comparison to care-as-usual. Disability and rehabilitation. 01-Sep.	Stroke Aftercare Inclusion: People in Holland, 18+ with stroke (ischemic or haemorrhagic) or TIA and were hospitalised Exclusion: those discharge to nursing home or region out with study base. Those with insufficient command of Dutch language or those with no legal competency (in theory would not be able to complete questionnaire) Design: Questionnaire concerning QoL and stroke impact of daily life sent 2 weeks prior to appointment and at 6 & 12 months Care As Usual Inclusion: People with stroke ischemic or haemorrhagic confirmed by neurologist within 7 days of inclusion date. Living at home for duration of study Exclusion: co morbidities that were anticipated to interfere with study outcomes, premorbid Barthel index of <18 and insufficient command of the Dutch language and premorbid cognitive decline as indicated on hetero-anamnesis list cognition	Stroke Aftercare vs Care as Usual Stroke Aftercare: People invited to a consultation at the out-patient neurology clinic, 6-8 weeks post discharge. Hospital discharges offered appointment at 6 months. Led by specialist nurse (neurology) . 45 min consultation with follow up as nurse feels necessary Care as Usual: Regular care consisting of consultation at neurology clinic (6-8 weeks post discharge) and secondary preventative follow-up.	HADS for depression Fatigue Severity Scale Checklist for Cognitive and Emotional Consequence of Stroke Utrecht Scale for Evaluation of Rehabilitation Participation Stroke Adapted Sickness Impact Profile EuroQoL-5D-3L	Stroke Aftercare: Decrease in emotional domain of CLCE No significant changes in cognitive domain of CLCE, FSS, SASIP-30 or EQ-5D-5L HADS (anxiety) – decreased in stroke aftercare cohort compared with care as usual EQ-5D-3L – no significant difference between groups USER-P – stroke after care group showed higher scores at baseline (less experience restrictions) but care as usual increased significantly and aftercare remained stable.	Stroke Aftercare patients within each group (cohort and non responders) differed in terms of age, depression and cognition. Patients in the care as usual cohort differed significantly from SA in stroke severity but not on baseline outcomes for depression/anxiety and less experiencing restriction on USER-P in SA compared with CAU

939	D. P. J. Verberne et al (2021). Economic evaluation of nurse-led stroke aftercare addressing long-Term psychosocial outcome: A comparison to care-As-usual. BMJ Open. 11. e039201.	See Verberne et al. (2020).	See Verberne et al. (2020).	Measures and time points: Main outcome measures of cost-effectiveness: quality-adjusted life years (QALYs) estimated by the quality of life measured by the five-dimensional, three-level EuroQol Time points: - 6 months post stroke - 6 months after the end of the intervention (Secondary outcomes not reported here)	Participants included: N=390 (Intervention: N=84; Control: N=306). Main findings: Health outcomes were significantly better in stroke aftercare compared with usual care for QALYs (Δ=0.05; 95% CI 0.01 to 0.09), social participation (Δ=4.91; 95% CI 1.89 to 7.93). Total societal costs were euro 1208 higher in stroke aftercare than usual care. (95% CI euro 3881 to euro 6057). Healthcare costs were in total euro 1208 higher in stroke aftercare than usual care (95% CI euro 3881 to euro 6057). Average costs of stroke aftercare were euro 91 (SD euro 3.20) per person. Base case cost-effectiveness analyses showed an incremental cost-effectiveness ratio of euro 24 679 per QALY gained. Probability of stroke aftercare being cost effective 64% on euro 50000 willingness-to-pay level.	See Verberne et al. (2020).

939	D. P. J. Verberne et al (2021). Economic evaluation of nurse-led stroke aftercare addressing long-Term psychosocial outcome: A comparison to care-As-usual. BMJ Open. 11. e039201.	Stroke Aftercare (n=84) Inclusion: People in Holland, 18+ with stroke (ischemic or haemorrhagic) or TIA and were hospitalised Exclusion: those discharge to nursing home or region out with study base. Those with insufficient command of Dutch language or those with no legal competency (in theory would not be able to complete questionnaire) Design: Questionnaire concerning QoL and stroke impact of daily life sent 2 weeks prior to appointment and at 6 & 12 months Care As Usual (n=306) Inclusion: People with stroke ischemic or haemorrhagic confirmed by neurologist within 7 days of inclusion date. Living at home for duration of study Exclusion: co morbidities that were anticipated to interfere with study outcomes, premorbid Barthel index of <18 and insufficient command of the Dutch language and premorbid cognitive decline as indicated on hetero-anamnesis list cognition	Stroke Aftercare V Care as Usual Stroke Aftercare: People invited to a consultation at the out-patient neurology clinic, 6-8 weeks post discharge. Hospital discharges offered appointment at 6 months. Led by specialist nurse (neurology) . 45 min consultation with follow up as nurse feels necessary Care as Usual: Regular care consisting of consultation at neurology clinic (6-8 weeks post discharge) and secondary preventative follow-up.	EuroQoL-5D-3L – scores transformed to 'utilities' and Quality-adjusted life years (QALYs) were calculated. HADS USER-P	Societal costs higher in stroke aftercare by comparison over 9 months but these did reduce over the 9 months Stroke aftercare – mean costs of healthcare reduced T1 to T2 but increased at T3 to T1 levels Non-healthcare costs higher in stroke aftercare by comparison but mean not significantly different 64% probability that stroke aftercare will be cost effective	

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
940	L. H. Wan et al (2016). Effectiveness of Goal-Setting Telephone Follow-Up on Health Behaviors of Patients with Ischemic Stroke: A Randomized Controlled Trial. Journal of Stroke and Cerebrovascular Diseases. 25. 2259-2270.	Setting: 2 major general hospitals in China Design: multicenter, assessor-blinded, parallel group RCT Participants: N=91 (N=46 intervention, N=45 control) Target sample size: N=20 per group. Age group: mostly 60-86 years M/F: 57/23 Stroke severity: mostly minor strokes Inclusion criteria: (1) age above 35 years, (2) hospitalization within 1 month of ischemic stroke onset (3) previous independence in daily activities, (4) score 0-3 on the modified Rankin Scale (mRS) at discharge (5) ability to communicate and provide informed consent. Exclusion criteria: (1) history of cardioembolic infarction, (2) Wernicke's aphasia, (3) cognitive impairment, (4) history of severe liver or kidney disease (5) any known malignancy or other neurological disease.	Experimental intervention: - aim: improve health behaviours (incl. medication, BP, physical activity, nutrition) by setting goals towards national guideline targets - content: same stroke education as control group - format: education and follow-up - dose: an additional 3 telephone follow-up calls at 1 week and at 1 and 3 months after discharge, each 15-20 minutes. - delivered by: trained stroke nurses - delivered how: telephone Control intervention: - content: usual stroke education with free leaflets on risk factor reduction - format: outpatient visits for routine BP measurements and medication adjustment - dose: NR	Measures and time points: - primary outcome: modified health behaviour scale based on the Health Promoting Lifestyle Profile II (HPLP II) (higher scores indicating better health behaviours.): nutrition and physical; activity - secondary outcome : modified Rankin Scale (mRS) score. Time points: baseline, 3 and 6 months after hospital discharge Assessed by: blinded assessors.	N=80 analysed (N=40 per group). Significant improvement in intervention compared to control group in medication adherence (mean difference NR): at 6 months only. No other statistically significant benefits in any of the other health behaviours including physical activity.	**++** High quality Well conducted RCT with sufficient power. Main limitations: - male-dominated sample - not generalizable to those with more severe, or haemorrhagic, stroke - health behaviours were self-reported only. - unclear if benefit was clinically relevant - Chinese population only - large number of health behaviours targeted in one intervention - only 3 follow-up phone calls over 3 months

940	L. H. Wan et al (2016). Effectiveness of Goal-Setting Telephone Follow-Up on Health Behaviors of Patients with Ischemic Stroke: A Randomized Controlled Trial. Journal of Stroke and Cerebrovascular Diseases. 25. 2259-2270.	Setting: 3 neurology departments of 2 major hospitals in China. Design: Multicentre, assessor blinded, parallel RCT (1:1). Participants (N=91) recruited from August 2014 – December 2014. Inclusion criteria: (i) above 35 years, (ii) hospitalization within 1 month of onset of ischemic stroke as diagnosed by CT or MRI, (iii)previous independence in daily activities, (iv) score of 0-3 on mRS at discharge and upon returning home following discharge, (v) ability to communicate and provide informed consent. Exclusion criteria: (i) history of cardioembolic infarction, (ii) Wernicke's aphasia, (iii) cognitive impairment, (iv) history of severe liver or kidney disease and (v) any known malignancy or other neurological disease.	Intervention: Participants were randomly assigned to either a control or intervention group. Control group (N=45) received usual stroke education, including freely available educational brochures on understanding stroke and cutting stroke risk. The participants went to see doctors for routine BP measurements and medication adjustment at the OP dept following discharge. Intervention group (N=46) received the goal setting and telephone follow-up programme. They received the same stroke education as the control group with an additional 3 telephone follow-up calls at (i) 1 week and at (ii) 1 month and (iii) 3 months after discharge, each lasting 15-20 mins to promote self-management techniques and maintenance of behavioural impairments. The intervention is a structured guideline based, goal setting programme consistent with current national guidelines for secondary prevention of ischemic stroke. The telephone follow-up sessions were conducted by stroke nurses and consisted of goal setting advice focused on selected areas. Patients set	All outcomes were measured at (i) baseline and during the (ii) third month and (iii) sixth month after hospital discharge. Primary outcome: Health Promoting Lifestyle Profile II (HPLPII). 2 subscales were used – (1) physical activity (8 items) and (2) nutrition (9 items). Additionally, 4 stroke-related subcategories (8 items) were added; low-salt diet, smoking abstinence, unhealthy use of alcohol, BP check-up frequency, medication adherence. This modified health behaviour scale including 6 sub-categories (25 items) was validated by 5 Chinese experts in nursing and medicine who specialise in stroke care. Secondary outcome: mRS score (7 point ordinal scale). Administered in person at baseline, and then by telephone at 3 months and 6 months. Additional questionnaires were completed for sociodemographic and	N= 91 patients were randomised to one of the 2 groups.N= 82 participants returned at 3 months for follow-up measurement and N= 80 returned at 6 months. The total loss to follow-up was 12.09% Baseline characteristics: No statistically significant differences in control group versus intervention group in terms of sociodemographic and disease specific variables. Changes in health behaviours: At baseline, there was a significant difference for unhealthy use of alcohol between groups, so ANOVA was used to assess group differences over time. Both groups showed improvements in health behaviours over time (baseline to 3 months). At 6 months follow up there was a statistically significant difference only in the medication	+ Acceptable Short follow-up time (6 months in total). Short recruitment period in one area (Guangzhou) of China, thus limiting generalizability. Control group usual care content unclear. Authors note that a secondary prevention clinic at each hospital was established during the study and this may have influenced the amount of education and advice offered to the control group. Most participants in the trial had minor stroke which may attach less important to secondary prevention. Multiple behavioural changes were being addressed which may have been difficult for participants to simultaneously consider. Most of the patients participating did not set measurable goals or develop actions plans

			measurable behavioural goals and developed action plans. During the first call, pre-stroke lifestyle was discussed and the aspects which should be improved to decrease recurrence risk were highlighted with an introduction to the related healthy lifestyle. During the follow-up calls, the stroke nurse praised the appropriate behaviour, stressed the benefits of this, identified problems and reassured/encouraged the patients to persist with positive behaviour. The protocol was designed by the investigator based on a literature review. This was validated by panel of 5 local experts in nursing and medicine. The intervention was implemented by 3 stroke nurses with a degree in nursing and at least 10 years of stroke nursing experience. Intensive training and supervision in delivery of intervention was provided.	disease specific items which collected information about: sex, age, education level, marital status, employment status, household income, family history of stroke, stroke subtype, stroke recurrence, duration of hypertension, BMI, presence of diabetes mellitus, dyslipidemia, and dysphagia. Patient diagnoses were collected from medical records.	adherence subcategory for the intervention group v's the control group. No statistically significant difference in any of the other health behaviour subcategories was present at 6 months between the intervention group v's the control group. mRS: The outcomes as measured by changes from baseline to the 3 and 6 month follow-ups did not differ between groups. There was a significant change in mRS score between times of measurement for both groups but not between groups.	especially in months 3-6 after discharge. Additional trials are required to determine the optimal strategies and frequencies of intervention for better long-term effects. The health behaviours were self-reported and memory issues and expectation bias may have influenced assessment. Further trials should consider patient's with higher post-stroke mRS scores eg. higher levels of disability or dependence in daily activities. Study excluded people with Wernicke's aphasia and cognitive impairment. Authors report 11 potential participants refused to take part and better recruitment methods are required. Attrition rate was less than 20% overall but selection bias may have contributed to study. Intention to treat analysis was discussed.
941	L. Shawo et al (2016).	Setting: 19 UK National Health Service (NHS) study	Experimental intervention: - Aim:	Measures and time points:	Recruitment: N=573, outcome data at 24	++

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
	An extended stroke rehabilitation service for people who have had a stroke: The extras rct. Health Technology Assessment. 24. 1-202.	Centers with ESD service that provided rehabilitation in the community, commencing within 48 hours of discharge from hospital. Design: parallel-group observer-blind multicenter individually randomized controlled trial Participants: N=573 Target sample size: N= 510 (Intervention N=285, Control N=288) Average age: median 71y. M:F=342:231 Time post stroke: median 72 days. Stroke severity: median NIHSS 2 Inclusion criteria: first-ever or recurrent stroke, receiving ESD and able to participate in a rehabilitation program focussing on extended activities of daily living (EADL). People with aphasia or those lacking capacity to consent could be included if a consultee agreed to their participation and was prepared to assist.	to maximize recovery and adjustment to residual disability in the context of everyday activities. format and content: structured reviews of mobility; personal care; (E)ADL, transport; communication; cognition; mood, medical issues, pain; and other issues. Review included goal setting and action planning. - dose: 5 reviews at 1, 3, 6, 12, and 18 months post-ESD. - delivered by: A senior member of the ESD team - delivered how: telephone - Usual NHS care Control intervention: Usual NHS care only (with onward referral were needed and available).	- Primary: Nottingham Extended Activities of Daily Living (NEADL Scale) at 24 months (MCID is 6 points) - Secondary outcomes: health status (Oxford Handicap Scale, OHS) Hospital Anxiety and Depression (HAD Scale), experience of services (survey based on Picker Institute questions (not at baseline)), quality of life (EQ-5D-5L), resource utilisation, adverse events; Assessed at 12 and 24 months post-randomization, mainly by telephone. Assessed by: blinded assessor	months from N=450/573 (78.5%) Between-group differences: - NEADL at 24 months not significant: 1.8 (95% CI, −0.7 to 4.2). - significantly fewer cases of depression at 12 months (29% intervention versus 40% control group) - significantly fewer cases of anxiety at 24 months (28% intervention versus 38% control group) - experience of care: more positive responses in intervention group - no difference in SAEs - intervention group experienced additional QALYs 0.07 (95% CI, 0.01 to 0.12). mean resource utilization cost (mainly in social care) lower in the intervention group (but not significant): −£311 [95% CI, −£3292 to £2787).	High quality A very well-conducted RCT, amongst the largest undertaken on community stroke services, involving a representative population of people (mostly with minor strokes) a comprehensive and documented intervention that focused on common needs after stroke, and robust methodology for outcome assessment, including the health economic analysis. [Additional HE Results: Probability that EXTRAS is cost saving is 68%. At current NHS standard of willingness to pay, probability that EXTRAS is cost-effective is 90%.]

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
941	L. Shaw et al (2016). An extended stroke rehabilitation service for people who have had a stroke: The extras rct. Health Technology Assessment. 24. 1-202.	Setting: Nineteen NHS study centres. Design: Pragmatic, observer-blind, parallel-group, multicentre randomised controlled trial. Includes health economic and process evaluations. Subjects: *Adults with a new stroke (first or recurrent) who received early supported discharge. N=573; Intervention N=285; controls :N=288 *Informal carers N=194 Intervention N=103; Control N=91.	Intervention: Extended stroke rehabilitation service (EXTRAS) comprising Five reviews by an ESD team member between 1 and 18 months following discharge from ESD services. Intervention usually delivered over the telephone. Reviewers assessed rehabilitation needs, with goal-setting and action-planning. Control: usual care post early supported discharge.	Primary outcome: *Nottingham Extended Activities of Daily Living Scale (NEADL) at 24 months post randomisation. Secondary outcomes at 12 and 24 months: *Hospital Anxiety and Depression Scale *Oxford Handicap Scale *Experience of services *Adverse events. Carer outcomes: *Caregiver Strain Index *Experience of services. Cost-effectiveness: *Resource utilisation costs (adaptation of the Client Service Receipt Inventory) *Quality-adjusted life-years	NS trial for outcome measures and adverse event rates. *24-month Nottingham Extended Activities of *Daily Living Scale adjusted mean difference of 1.8 (95% confidence interval – 0.7 to 4.2). *Patient and carer satisfaction greater in the intervention group. *Mean cost resource utilisation was lower but NS in the intervention group: – £311 (95% confidence interval –£3292 to £2787)- provides a 68% chance of EXTRAS being cost saving. Intervention associated with 0.07 (95% confidence interval 0.01 to 0.12) additional quality-adjusted life-years giving a 90% chance that EXTRAS is cost-effective.	++ High quality RCT; unable to blind participants or those delivering the intervention; multiple PROMs

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
942	H. Rodgers et al (2019). Evaluation of an Extended Stroke Rehabilitation Service (EXTRAS): A Randomized Controlled Trial and Economic Analysis. Stroke. 50. 3561-3568.	See L. Shaw et al (2016).	See L. Shaw et al (2016).	See L. Shaw et al (2016).	See L. Shaw et al (2016).	See L. Shaw et al (2016).

942	H. Rodgers et al (2019). Evaluation of an Extended Stroke Rehabilitation Service (EXTRAS): A Randomized Controlled Trial and Economic Analysis. Stroke. 50. 3561-3568.	Setting: ESD, UK, 19 NHS centres Design: parallel-group observer-blind multicenter individually RCT Subjects: Adults with a new stroke (first-ever or recurrent) receiving ESD and able to participate in an extended ADL rehabilitation Programme (? Included people with aphasia and cognitive impairment)	EXTRAS (extended stroke rehabilitation service): designed to to maximize recovery and adjustment to residual disability in the context of ADL 5 structured reviews (mostly by phone): 1, 3, 6, 12, and 18 months post-ESD; delivered by 'senior member' of the ESD team; content: mobility; personal care; mealtimes; domestic activities; work and volunteering; hobbies and interests; driving and transport; communication; memory and concentration; mood, anxiety and depression; medical issues; pain; and other issues. Action plan and goal setting; feedback; self-management No. and frequency of reviews determined pragmatically (resource dependant)	Primary outcome: Nottingham Extended Activities of Daily Living [NEADL] Scale Secondary outcomes: Oxford Handicap Scale [OHS]; Hospital Anxiety and Depression [HAD] Scale; EQ-5D-5; pre-stroke resource usage (adaption of Client Service Receipt Inventory collected 12 and 24 months post-randomization	NEADL @ 24 months Intervention: (n=219) 40.0 (SD 18.1); Usual care (n=231) 37.2 (SD 18.5) adjusted mean difference of 1.8 (95% CI, –0.7 to 4.2). OHS: (see fig 2, p.3565) At 24 months, the odds of intervention group being in worse health was 0.7x as high than for control patients (95% CI, 0.5 to 1.0) HAD, Anxiety: Intervention: (n=217) 5.4 (SD 3.8); Usual care: (n=230) 6.4 (SD 4.6) −0.9 (95% CI, −1.8 to 0.0) HAD, Depression: Intervention: (n=217) 5.9 (SD 4.3); Usual care: (n=230) 6.7 (SD 4.6) −0.8 (95% CI, −1.5 to -0.1) EQ-5D-5 (see table 3, p.3565) Resource usage –£311 (–$450 [95% CI, −£3292 to £2787; −$4764 to $4033]) Quality Adjusted Life Years (0.07 [95% CI, 0.01 to 0.12]) Probability of being cost-effective at £20 000 = 90%; Probability that EXTRAS is cost saving = 68%	+ Acceptable Because SIGN criteria for RCTs do not allow for the inability to 'blind' adequately

943	T. Askim et al (2018). Efficacy and Safety of Individualized Coaching After Stroke: the LAST Study (Life After Stroke)A Pragmatic Randomized Controlled Trial. Stroke. 49. 426-432.	Setting: 2 centers in Norway Design: multicentre, pragmatic, single-blinded, randomized controlled trial Participants: Intervention: N=186; Control: N=194. Target sample size: 170 per group. Average age: approx. 72 years Time post stroke: 10-16 weeks post-stroke Stroke severity: mostly minor stroke Inclusion criteria included: - discharged from hospital or inpatient rehabilitation and were community dwelling - modified Rankin Scale (mRS) score <5 Exclusion criteria included: - cognitive deficits (Mini-Mental State Examination <21 points or <17 points for patients with aphasia), contraindication to participation in motor training,	Experimental intervention: - aim: prevent functional decline - content and format: individual coaching, options to participate in groups in different settings - dose: 1x per month, 18 months. Per week: 45 to 60 minutes incl. 2 to 3 periods of vigorous activity once a week plus physical activity for 30 minutes 7 days a week - delivered by: physiotherapist - delivered how: face-face and telephone - plus standard care Control intervention: standard care post discharge: usually 45 minutes of physiotherapy at moderate intensity per week. Rehabilitation is often limited to the first 3 months for patients with mild to moderate strokes, can last for up to 6 months for patients with the most severe strokes or longer.	Measures and time points: Primary outcome: Motor Assessment Scale at end of intervention. Other outcomes: - Barthel index, - Modified Rankin Scale - item 14 from Berg Balance Scale - Timed Up and Go test - gait speed - 6-minute walk test - Stroke Impact Scale - EQ-5D-5L - Fatigue Severity Scale - one item on fatigue from the HUNT3 (third Nord-Trøndelag Health Study) questionnaire, - Hospital Anxiety and Depression Scale, - Mini-Mental State Examination, - Trailmaking A and B - Caregiver Strain Index - adverse events - compliance to the intervention assessed by training diaries and the International Physical Activity Questionnaire	Participants included: Intervention: N=186; Control: N=194. Main findings: compared to those in the control group, those in the experimental group demonstrated no significant differences in any of the outcome measures. There was a greater improvement on Timed Up and Go test in the control group (7.05 seconds [95% CI 2.86, 11.25], P=0.001). Participants in the intervention group were more active in terms of vigorous activity compared with the control group at 6-months (P=0.009), 12-months (P=0.016), and 18-month follow-up (P=0.033).	**+** Acceptable Well-conducted RCT with sufficient power, validated outcomes and blinded assessors, intention to treat analysis. Main limitations - selected sample, possibly at ceiling effect of motor recovery - self-reported measure of physical activity and exercise - lack of information about physical activity and exercise performed by the control group - blinding success not evaluated

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
				Time points: 18-month follow-up Assessed by: blinded assessors.		

943	T. Askim et al (2018). Efficacy and Safety of Individualized Coaching After Stroke: the LAST Study (Life After Stroke)A Pragmatic Randomized Controlled Trial. Stroke. 49. 426-432.	Setting: community-dwelling stroke survivors recruited from 2 hospital outpatient settings in Norway. Design: RCT (single-blinded parallel group) Participants: N = 380 (Intervention group: N=186; control group: N=194) Inclusion criteria: ≥18 years; confirmed stroke (infarct or intracerebral haemorrhage); discharged from hospital/inpatient rehab and community dwelling; modified Rankin Scale (mRS) score <5; no serious comorbidities which would affect ability to perform intervention; able to consent. Exclusion criteria: serious medical comorbidity with short life expectancy; cognitive deficits with Mini Mental State Examination (MMSE) <21 points (<17 if person with aphasia); contraindication to participation in motor training; inclusion in another study.	Intervention group: standard care (see below) plus monthly individualised coaching from physiotherapist for 18 consecutive months: goal-setting-> schedule of exercise and physical activity for next month. Exercise: ≥45-60 mins with 2-3 periods of vigorous activity once a week; physical activity: ≥30 mins 7 days a week. Participants to keep training diary. Monthly review meetings. First 6 meetings all face-to-face; next 6 meetings- every second meeting could be by phone; next 6 meetings- 4 of 6 meetings could be by phone. Control group: Standard care: 3 month follow-up in outpatient clinic; physiotherapy rehabilitation (usually 45 mins per week moderate intensity) usually for 3-6+ months depending on stroke severity; at end of rehab, self-management of physical activity & exercise.	Primary outcome: motor function on Motor Assessment Scale (MAS) measured: - at baseline - at 18 months Measured by: ??? Secondary outcomes: - Barthel index - mRS - item 14 from Berg Balance Scale - Timed Up and Go test - 10 metre maximum gait speed - 6-minute walk test - Stroke Impact Scale 3.0 - EQ-5D-5L - Fatigue Severity Scale - 1 item on fatigue from HUNT3 - Hospital Anxiety and Depression Scale - MMSE - Trailmaking A and B - Caregiver Strain Index Adverse events: Collected from Norwegian Patient Registry. Information on death collected from hospital records or next of kin Compliance: assessed using training diaries and	N= 153 in intervention group and N= 162 in control group assessed at 18 months. N= 186 (intervention group) and N = 194 (control group) included in intention-to-treat analysis. On primary outcome: MAS: both groups declined in motor function; no significant difference between intervention and control groups (P = 0.512) No evidence of effect on primary outcome for any of the pre-specified subgroups (gender; age; mRS score; MMSE score; location) On secondary outcomes: only Timed Up and Go test showed significant difference between groups: control group showed greater improvement than intervention group (P=0.001) Adverse events: no significant difference	+ Acceptable Randomisation appeared robust Intention-to-treat analysis carried out Few drop-outs However, trial is single-blinded (with no information on how participants were blinded) -Not stated who carried out outcome measures -Authors note that in control group, level of activity/exercise unknown/unrecorded (not asked to keep training diary as that would contaminate results)

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				information recorded by physiotherapists.	between intervention and control groups.	

Recommendations for research

Common limitations across the studies described above concern the population included, which comprised primarily people with mild stroke symptoms, whilst those with aphasia were excluded (Verberne et al., 2020 and 2021), or their inclusion was unclear (Askim et al., 2018 and Dohl et al. 2020). This resulted in the under-representation of those with more severe strokes and/ or communication difficulties, who are likely to experience more complex needs. An important question is whether the interventions were relevant for participants' own needs and goals. Person-centred goal setting was included in two of the studies (Rogers et al., 2019 and Shaw et al., 2020; Askim et al., 2018 and Dohl et al., 2020) but only the first asked participants whether or not they felt their needs had been met (Rogers et al., 2019 and Shaw et al., 2020). It is therefore not clear from the studies reviewed to what extent the interventions addressed participants' needs that mattered most to them.

Other study limitations relate to the alignment of the intervention content, mode of delivery and outcome measures. Being restricted to the telephone may not suffice if the aim is to improve extended activities of daily living, since these are likely to require a home visit and face-face intervention, as the authors acknowledged (Rogers et al., 2019 and Shaw et al., 2020).

In terms of timing the intervention, there was variation in the start of the follow-up intervention as well as its frequency. The maximum intervention duration was 18 months in two studies (Rogers et al., 2019 and Shaw et al., 2020); Askim et al. 2018 and Dohl et al., 2020), which is longer than many rehabilitation studies - but stops short of spanning the often life-long needs that many people with stroke experience. Hence, uncertainty remains about these important intervention delivery parameters.

Further high-quality research in this important area is urgently needed, and it is essential that people with stroke are actively involved in the design of future studies on this topic. Future high-quality research should:

- involve a more representative stroke population, with a wide range of stroke symptoms, including those with cognitive and communication difficulties.

- investigate the optimum time after discharge to instigate the structured needs review, the optimum frequency of repeating this, and the optimum duration of follow-up reviews.
- investigate follow-up interventions that address the needs related to stroke survivors' lives and the goals that matter most to them
- investigate not just the effects and cost-effectiveness, but also the experiences of these interventions by people affected by stroke.
- ensure that the intervention goals, treatment processes and outcomes of follow-up intervention strategies are all optimally aligned.
- investigate which knowledge, skills and competencies are required for undertaking follow-up reviews and referrals that are effective, efficient and meaningful to people affected by stroke.
- investigate the feasibility, experiences, effects and costs-effectiveness of support services provided outside of health- and social care (e.g. by community support groups or local councils) and explore the extent to which they address goals that matter most to people affected by stroke.
- explore whether current outcome measures commonly used in studies on follow-up rehabilitation are valid and sufficiently sensitive to capture aspects of and changes in quality of life that are important to the stroke survivor (and their family).