Clinical Rehabilitation

Moving stroke rehabilitation evidence into practice; a systematic review of randomised controlled trials

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Objective

To investigate the effectiveness of interventions aimed at moving research evidence into stroke rehabilitation practice through changing the practice of clinicians.

Data sources

EMBASE, CINAHL, Cochrane and MEDLINE databases were searched from 1980 to April 2019. International trial registries and reference lists of included studies completed our search.

Review methods

Randomized controlled trials that involved interventions aiming to change the practice of clinicians working in stroke rehabilitation were included. Bias was evaluated using Revman to generate a risk of bias table. Evidence quality was evaluated using GRADE criteria.

Results

Sixteen trials were included (250 sites, 14,689 patients), evaluating a range of interventions including facilitation, audit and feedback, education, and reminders. Eleven studies included multicomponent interventions (using a combination of interventions). Four used educational interventions alone and one used electronic reminders. Risk of bias was generally low. Overall, the GRADE criteria indicated that this body of literature was low quality. This review found higher efficacy of trials which targeted fewer outcomes. Subgroup analysis indicated moderate level GRADE evidence (103 sites, 10,877 patients) that trials which included both site facilitation and tailoring for local factors were effective in changing clinical practice. The effect size of these varied (OR 1.63-4.9). Education interventions alone were not effective.

Conclusions: A large range of interventions are used to facilitate clinical practice change. Education is commonly used, but in isolation is not effective. Multicomponent interventions including facilitation and tailoring to local settings can change clinical practice and are more effective when targeting fewer changes.

Introduction

In stroke rehabilitation units, treatment delivered according to clinical guidelines leads to better recovery.[1] The impact of adhering to multiple clinical guidelines is additive, with positive impacts on both mortality and disability for people with stroke.[2] Hence, increasing the use of clinical guidelines will lead to improved patient outcomes.

Despite the availability of clinical guidelines, moving research evidence to clinical practice is limited and slow.[3,4] Specifically within the area of stroke rehabilitation, adherence to clinical guidelines is poor.[5] For example, guideline use is limited in occupational therapy.[6] Physical therapists are reported to use guidelines less than fifty percent of the time.[7] Changing clinician behaviour to use more guidelines is a complex issue.[8] Personal (e.g., familiarity with the recommended treatments) and environmental factors (e.g., available time and space, support from management) contribute to this complexity.[9]

The lack of clinician uptake of guidelines has driven an evolving body of research that measures the effectiveness of strategies aimed at altering clinical practice behaviour and subsequently patient outcomes. These emerging intervention types, targeting clinicians, are often referred to as knowledge translation interventions. Knowledge translation has been defined as a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically-sound application of knowledge to improve health and health services.[10]

Traditionally education has been the most commonly used intervention in rehabilitation to support practice change.[11] However, more trials involving complex and multicomponent interventions are being undertaken and published. Multicomponent interventions use a bundle of different activities, with many using facilitators to initiate and maintain desired behaviour changes. Care pathways are another type of activity that aim to change practice. These are defined as complex interventions for the mutual decision-making and organisation of care processes for a well-defined group of patients during a well-defined period.[12]

To date, there has not been a review which systematically examines the type and complexity of knowledge translation interventions designed to improve the clinical application of evidence-based practice in stroke rehabilitation. The emergence of computer reminders and recently developed web-based supports also necessitates this current review. We aim to systematically evaluate the effectiveness of knowledge translation interventions targeting clinician practice changes in stroke rehabilitation to inform future implementation research and practice.

Methods

A literature search from 1980 to the current date (12th March 2019) using four electronic databases (EMBASE, CINAHL, Cochrane CENTRAL and MEDLINE) was conducted based on the domains of stroke and rehabilitation, knowledge translation intervention and modalities, outcomes and practice guidelines. The search strategy is presented in Appendix 1. The references and citations of the included studies were reviewed for additional relevant publications. Trial registries for ongoing studies in this area were searched, and five relevant studies located. Where recruitment was completed, the study authors were contacted to determine if publication was imminent. One author group with a published abstract provided more detail and is included in this review.

Two reviewers independently screened results using Covidence software.[13] Conflicts in study allocation were resolved through discussion between reviewers. Full text articles were screened for inclusion using a standardized tool (Appendix 2). Studies were included if

- Participants were clinicians in stroke rehabilitation settings (rehabilitation was defined as any period after the patient was medically stable and still in care).
- Interventions were delivered with the intent to change clinical practice[14]
- Comparators were either no intervention or another intervention (e.g., a passive distribution of guidelines).

- Outcomes measured clinician practice behaviour change or patient outcomes but not organisational change.
- They were peer reviewed articles of randomised control trials (RCTs).

Data were excluded if the study focused on acute medical management (e.g. thrombectomy or treatment in intensive care).

Data extracted included participant and setting characteristics, description of the knowledge translation interventions, theoretical frameworks, evaluation methods and findings. Where possible we described the interventions in line with recommendations from the Expert Recommendations for Implementing Change Checklist.[15] Bias was evaluated, generating a risk of bias table in Revman software.[16] Evidence quality was evaluated using GRADE criteria, evaluating risk of bias, inconsistency, indirectness, imprecision and publication bias.[17] This review was prospectively registered on 19th March 2018 with PROPSPERO: CRD42018090998 and complies with the PRISMA criteria for reporting systematic reviews.

Results

The literature search yielded 1357 unique citations. Title and abstract screening removed 1279 citations. Seventy-eight full text articles were reviewed and seventeen papers describing sixteen studies are included.[9, 18-33] The screening process is represented in the Figure 1. The SCORE-IT trial (Bayey[20] and Salbach[9]) reported different outcomes from the same trial and were combined.[34]

Participants and study designs

Most studies included multiple professions or multidisciplinary teams and were clustered at the ward or hospital level (Table 1). Other interventions were directed at five single professions[18,21, 22,26,28] and a team of physical therapists and occupational therapists.[32] Thirteen trials were cluster randomised trials.

Interventions

Half of the studies were multicomponent interventions and three others described their intervention as a 'care pathway'. Four out of five single interventions involved educational training[18, 21, 22, 26] and one used electronic reminders.[28] Site facilitators were commonly used and described in ten trials.[22-25, 27, 29-31, 33, 34] There was considerable variety in facilitator training, length of intervention, settings and local tailoring. While six of the sixteen studies described an underlying theoretical approach to their intervention, these approaches were all different (Table 2).

Outcomes

Five studies focused solely on patient outcomes.[19, 22, 29, 30,32] Seven studies focused on clinician outcomes only[18, 23, 24, 26, 27, 31, 33] and four reported on both.[21, 25, 28, 34] The type and number of outcomes varied considerably (range 1-21, mean 7.7); most studies investigated multiple outcomes. Eight studies evaluated practice change by measuring the use of clinical guidelines before and after intervention. Ten studies identified primary outcomes, with seven multidisciplinary cluster RCTs identifying between one and three primary outcomes.[24, 29-34]

No significant change in clinician practice were reported from the four education interventions (1628 patients).[18, 21, 22, 26] Electronic reminders used in general practice (311 patients) produced a large improvement in guideline use (OR 4.9) and reduction in mortality (OR 0.27). The care pathway interventions produced mixed results. One care pathway study with site facilitators and with intervention tailoring improved all care indicators (7/7) and most process indicators (12/14).[25] The other two care pathways did not involve tailoring of the intervention and consequently not find any significant results.[19, 30]

Level of evidence

Overall, the body of the literature reporting the use of knowledge translation interventions to change clinician behaviour and practice was of low quality based on the GRADE criteria. Evidence was downgraded twice; once for inconsistency due to differences in enrolment and

outcomes populations (i.e., patients treated or health professionals) and once for indirectness due to large variations in intervention types. Most studies were unable to blind participants. Other biases were generally rated low (Figure 2); for example, imprecision was less of a concern and rated low as there were multiple large studies.

Subgroup analysis

A subgroup analysis of seven multidisciplinary and multicomponent trials that used facilitation as one component showed moderate GRADE level evidence indicating effectiveness in producing positive results in at least one primary outcome (data from five trials, 103 sites, 10 877 participants).[24, 27, 29, 34] While the two other multicomponent multidisciplinary interventions with facilitators found no significant between group difference, improvements in both control and intervention groups were reported.[23, 33]

Figure 1. Prisma flow chart of study screening

Figure 2. Risk of Bias of included studies

Discussion

Interventions that aim to change clinician behaviours vary in effectiveness. Trials that included an education intervention in isolation were not effective. Support for clinicians from site facilitators was frequently included in effective studies. Interventions that included an element of site-specific tailoring of the intervention (for example workshops to examine local barriers and ways to overcome them) were generally effective. Trials that identified primary outcomes or had a small number of outcomes appeared to have more positive results.

This is the first systematic review of knowledge translation interventions designed to change stroke rehabilitation clinician behaviours. We reported adherence to practice guidelines, protocols and any effect on patient outcomes where available. This review identified multiple

large studies with low levels of bias. Heterogeneity among interventions, comparators and outcome measures produced mixed results resulting in a low level of evidence overall.

This review identifies a couple of successful intervention components to improve rehabilitation guideline uptake; facilitation and tailoring of interventions for local settings. Facilitation is supported by data from nearly 11, 000 participants from over 100 sites, strengthening the importance of this finding in stroke rehabilitation. Our review supports previous research that advocates tailoring of guideline implementation in wider rehabilitation settings.[35] However, more research is still required to develop generalizable tailoring strategies.[36]

Education in isolation was not found to be an effective implementation intervention for practice change. None of the four studies in this review reported a change in clinician practice or any patient outcomes. While education and training appear to be the standard intervention in frontline clinical practice,[11] we recommend that education be included with other components for promoting practice change. Stopping ineffective processes, like education interventions in isolation, may be one of the most powerful ways to move the area of clinical practice change forward.

While only one study used electronic reminders to increase adherence to medication guidelines, this intervention produced the largest effect size seen in this review. That study reported a five fold increase in guideline use and a 60% reduction in death rates compared to control.[28] The use of technology such as reminders in electronic medical records warrants future exploration.

A novel finding in this review is the higher efficacy of trials which targeted primary outcomes or fewer outcomes. This may reflect overall study quality or a focus of attention or be an element of successful implementation. Implementing a large number of practice changes concomitantly has been identified as problematic,[9] and may justify the modest improvements seen in this review. Practice change typically requires multiple new behaviours to be

adopted, and the resource issues associated with such implementation is another known barrier.[37] To address this, targeting a few well-defined clinician behaviour changes may be one way of achieving effective results.

Synthesis of data identified in this review is limited by the large range of study designs, intervention targets and comparators, and outcomes. These limitations may contribute to the low quality of evidence rating and the observed differences in the size and direction of the results. A subgroup analysis was not pre-specified, and this may have introduced further bias.

A large range of interventions are used to facilitate clinical practice change. We were able to identify some strategies or intervention components that were included in effective trials Multicomponent interventions including facilitation and tailoring to local settings can change clinical practice and are more effective when targeting fewer changes. Education and training are commonly used, but in isolation these are not effective in producing practice change of clinicians working in stroke rehabilitation.

Clinical Messages

- Multicomponent multidisciplinary interventions that include site facilitation and consideration of local settings can change clinical practice.
- Education and training interventions should form part of multicomponent interventions and not be used in isolation.
- Implementing a small number of practice changes at a time produces more effective results.

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Table 1. Study design, population, intervention type and outcomes of included studies.

Author and Study Design Location [Target]	Intervention Type and components	Multi-disciplinary (yes/no)	Outcome tool used (s)	Results	Outcome number and type
Allen, 2004[19] RCT	Care Pathway	Yes		*SMD(SE)*	No
USA [Patient Outcomes].			Neuromotor function	-0.028(0.087)	primary
			Institution time/death,	-0.042(0.084)	Five
			Quality of life	-0.049(0.11)	Domains
			Risk Management	0.024(0.048)	
			Stroke Knowledge and lifestyle	0.26(0.070)*	
Bayley, 2018[20] Cluster RCT	Multicomponent:	Yes		*OR (95%CI)*	**2 Primary Patient outcomes**
Canada	Site Facilitation		Primary Lower Limb - Mobility	**1.63(1.23-2.17)***	
[Patient Outcomes]	Tailoring via workshops		Primary Upper Limb - Box Block Test	**1.69 (0.72-4.01)**	
	Reminder cards		**Adherence to guidelines**	*ES (95% CI)&*	
Salbach, 2017[9]Cluster RCT	Booklets		Sit-to-stand	0.34 (0.17, 0.54)*	18
[Clinician Outcomes]			Lower Extremity Range of Motion	-0.22 (-0.41, -0.04)^	Clinician
(Guideline use)			Lower Extremity Brace	-0.02 (-0.21,0.16)	outcomes
			Task Training (Leg)	-0.05 (-0.24,0.13)	
			Training sitting balance	-0.19 (-0.37, -0.01)^	
			Training standing balance	-0.25 (-0.43, -0.06)^	
			Lower Extremity FES	-0.05 (-0.24,0.13)	
			Walking Practice	0.38 (0.19, 0.56)*	
			Treadmill Walking	0.009 (-0.18,0.19)	
			Upper Extremity Range of Motion	0.10 (-0.08,0.29)	
			Upper Extremity Brace	0.09 (-0.09,0.28)	
			Task Training (Arm)	0.10 (-0.09, 0.28)	
			Reduce Hand Edema	-0.008 (-0.19,0.18)	
			Treatment Shoulder	0.13 (-0.05, 0.32)	
			Upper Extremity FES	0.02 (-0.16, 0.20)	
			Upper Extremity Education	0.09 (-0.10, 0.27)	

Author and Study Design Location [Target]	Intervention Type and components	Multi-disciplinary (yes/no)	Outcome tool used (s)	Results	Outcome number and type
			Constraint Therapy Visual Imagery for Arm	0.05 (-0.14,0.23) 0.09 (-0.10,0.27)	
Jones 1998[21] RCT United Kingdom [Patient Outcomes] [Clinician Outcome] (Clinician knowledge)	Education	No	19 joint positions in patients Nurse stroke knowledge Nurse positioning knowledge	No between group differences (presented as pre/post) % difference 10% 3%	19 Patient outcomes No Primary 2 Clinician outcomes
Jones 2005[22] Cluster RCT United Kingdom [Patient Outcomes]	Education	No	Rivermead Mobility Index Patient Positioning (6month)	*ES (95%CI)*[&] **-0.03(-0.46, 0.41)** 0.2(-0.03, 0.43)	**One Primary**
Lakshminarayan 2010[23] Cluster RCT USA [Clinician Outcomes] (Guideline use)	Multicomponent: Site facilitation Audit and feedback Tailoring through customized feedback	Yes	**Adherence to guidelines** Aspirin within 24 hours Smoking cessation counselling Early mobilization PT and OT within 48hours	*OR (95% CI)* 1.4 (0.95–2.1) 1.4 (0.79–2.4) 0.58 (0.33–1.04) 0.98 (0.66–1.5)	No Primary 4 Clinician outcomes
Lynch 2015[33] Cluster RCT Australia [Clinician Outcomes] (Guideline use)	Multicomponent: Site facilitation Education Audit and feedback Reminders Tailoring via workshop	Yes	**Adherence to guidelines** Assessment of rehabilitation needs	*OR (95% CI)* **Intervention 4.13 (2.54-6.71)** **Control 3.41 (1.99-5.84)**	**One Primary**
McLusky 2016[32] Cluster RCTAustralia [Clinician and Patient Outcomes]	Multicomponent: Workshop with goal setting and education Tailoring via feedback	Yes	Number of clients receiving 4 or more outings/week during rehabilitation	*Risk difference* **4% (-9 – 17)** 0.5 (-0.4 – 1.4) 0.5 (-1.8 – 2.8)	**One Primary** 2 secondary

Author and Study Design Location [Target]	Intervention Type and components	Multi-disciplinary (yes/no)	Outcome tool used (s)	Results	Outcome number and type
			Number of outings/week during rehabilitation Number of outings/week 6 months later		
Middleton 2011[24] Cluster RCT Australia [Patient Outcomes] [Clinician Outcomes] (Guideline use)	Multicomponent: Site facilitation Education Reminders Tailoring via workshops	Yes	**Modified Rankin>2 90 days** Barthel index SF-36 physical SF-36 Mental Length of stay **Adherence to guidelines** Fever – mean temp ≥ one temp recorded 24hr Glucose mean 24hr Swallow screen 24hr	*ES (95% CI)*[&] **0.2 (0.06-0.31)*** 0.2 0.06-0.07) 0.32(0.06-0.20)* 0.05(-0.08-0.06) 0.07(-0.06-0.06) *Absolute difference (95%CI)* 0.09(0.04-0.15)* 16.4%(8.3-24.6)* 0.54(0.08-1.01)* 29.2(22.0-36.4)*	**One Primary** 4 Patient outcomes 4 Clinician outcomes
Panella 2012[25] Cluster RCT Italy [Patient Outcomes].	Care Pathway	Yes	30-day mortality after stroke 7-day mortality Hospital LOS Hospital readmission Institutionalization after discharge Return to function Complication rates	OR (95% CI) 0.70 (0.35-1.37)[#] 0.42 (0.15-1.11)*[##] - - 1.29(0.58-2.87) 2.7(1.5-4.88)* 1.3(0.98-1.43)*	No Primary 6 Patient Outcomes
[Clinician Outcomes] (Guideline use)			**Adherence to guidelines** Provide information Use of Protocol Use of CT/MRI>48hr Aspirin <24 hr Swallow screen BP Assessment	*OR (95% CI)* 1.16 (1.08 -.24)* 18.64 (8.14-44.31)* 1.78 (0.58-5.61) 1.73 (1.02-2.75)* 15.3 (3.1-101)* 10.44 (6.06-18.10)*	21 Clinician Outcomes

Author and Study Design Location [Target]	Intervention Type and components	Multi-disciplinary (yes/no)	Outcome tool used (s)	Results	Outcome number and type
			ECG <24hours	0.82 (0.35-1.94)	
			Continuous monitors 48hours	5.57 (3.21-9.73)*	
			Discharge assessment	1.82 (0.88-3.77)	
			Discharge plan	2.01 (1.26-3.21)*	
			Discharge sign plan	999 (137-20374)*	
			Discharge summary	3.90 (2.26-6.67)*	
			FIM at discharge-	30.4 (13.5-71.2)*	
			FIM at 3 months	45.6(11.2-205.6)*	
			Admit to stroke unit	7.24 (4.45-11.82)*	
			Stay in stroke unit	27.6 (8.1-104.1)*	
			Use of case manager	189(28-3698)*	
			Stroke Team	59.0 (13.6-360.4)*	
			Rehabilitation need assessment<48hours	20. (9.0-46.1)*	
			Discharge need assessment and plan	32.8 (15.1-73.8)*	
			Follow up at 3 months	28.0 (4.09-91.88)*	
Pennington 2005[26] Cluster RCT United Kingdom [Clinician Outcomes] (Guideline use)	Education	No	**Adherence to guidelines**	Mean difference pre-post Group1 -1.72, Group 2 0.52 Between group difference	10 Clinician Outcomes
			Implementation	0.29	
			Number new activities	2.19*	
			Number hours EBP activities	31.1	
			Change in Culture	0.43	
Power 2014 [27] Cluster RCT [interrupted time series design] United Kingdom [Clinician Outcomes]	Multicomponent: Site facilitation Weekly sharing and learning meetings Web portal	Yes	**Rehabilitation Bundle**	OR Ratio (95%CI)	No Primary 5 Clinician Outcomes
			PT Assessment	1.6 (0.98, 2.6)	
			OT Assessment	1.06 (0.68, 1.67)	
			Mood Assessment	2.68 (1.69, 4.26)*	
			Multidisciplinary Team Goals	5.43 (3.26, 9.05)*	

Author and Study Design Location [Target]	Intervention Type and components	Multi-disciplinary (yes/no)	Outcome tool used (s)	Results	Outcome number and type
	Tailoring via feedback		>50% of stay in stroke unit	1.17 (0.8, 1.72)	
Ranta 2015[28] Cluster RCT New Zealand [Patient Outcomes] [Clinician Outcomes] (Guideline use)	Electronic Reminders	No	 90-day stroke risk TIA/Stroke 90 days Vascular event or death Treatment plan **Adherence to guidelines**	OR Ratio (95%CI) **0.27 (0.05–1.41)#** 0.26 (0.56–0.85)*# 0.27 (0.10–0.73)*# 3.44 (1.93–6.13)* **4.56 (2.75–7.57)***	**One Primary** **One Primary**
Strasser 2008[29] Cluster RCT USA [Patient Outcomes]	Multicomponent: Site facilitation Education Audit and feedback Tailoring with feedback	Yes	 (FIM Score gain>23%), Community discharge Length of stay	Between group difference **13.6%*** **5.5%** **3.0 days**	**Three Primary**
Sulch 2000[30] Cluster RCT United Kingdom [Patient Outcomes]	Care Pathway	Yes	 Length of stay Death PT input OT input	ES (95%CI)& **0.23 (-0.09-0.55)** 0.37 (0.04-0.69)^ 0.08 (-0.24-0.40) 0.07 (-0.68-0.82)	**One Primary** 9 secondary
van peppen 2009[18] Pilot RCT Netherlands [Clinician Outcomes]	Education	No	 Number of outcome measures used self-reported use of outcomes	*pre/post I, pre/post C* 15/13, 15/14 *median (range)* 3(0-6)/6(1-7), 3(0-6), 4(0-6)	**One Primary** One secondary
Williams 2015 [31] Cluster RCT [with follow up] USA [Clinician Outcomes] (Guideline use)	Multicomponent: Site facilitation Education Audit and feedback Tailoring via barrier identification	Yes	**Adherence to guidelines** DVT prophylaxis Dysphagia screening Composite indicator Defect-free care	*OR (ratio)* **4.9*** **1.04** 1.15 1.25	**Two Primary**

Author and Study Design Location [Target]	Intervention Type and components	Multi-disciplinary (yes/no)	Outcome tool used (s)	Results	Outcome number and type
*Significant difference between conditions (favors intervention). ^Significant difference between conditions (favors of control). [&]ES calculated from pre-post data provided in paper. [#]OR less than 1 indicates a positive result for the intervention			I=Intervention, C=Control MultiD=Multidisciplinary, EBP - Evidence-based practice. FES – Functional Electrical Stimulation, FIM – Functional Independence Measure, Primary outcome(s) bolded		

Table 2 Description of intervention setting, study size, theoretical framework, content of intervention and comparator, and contextualisation.

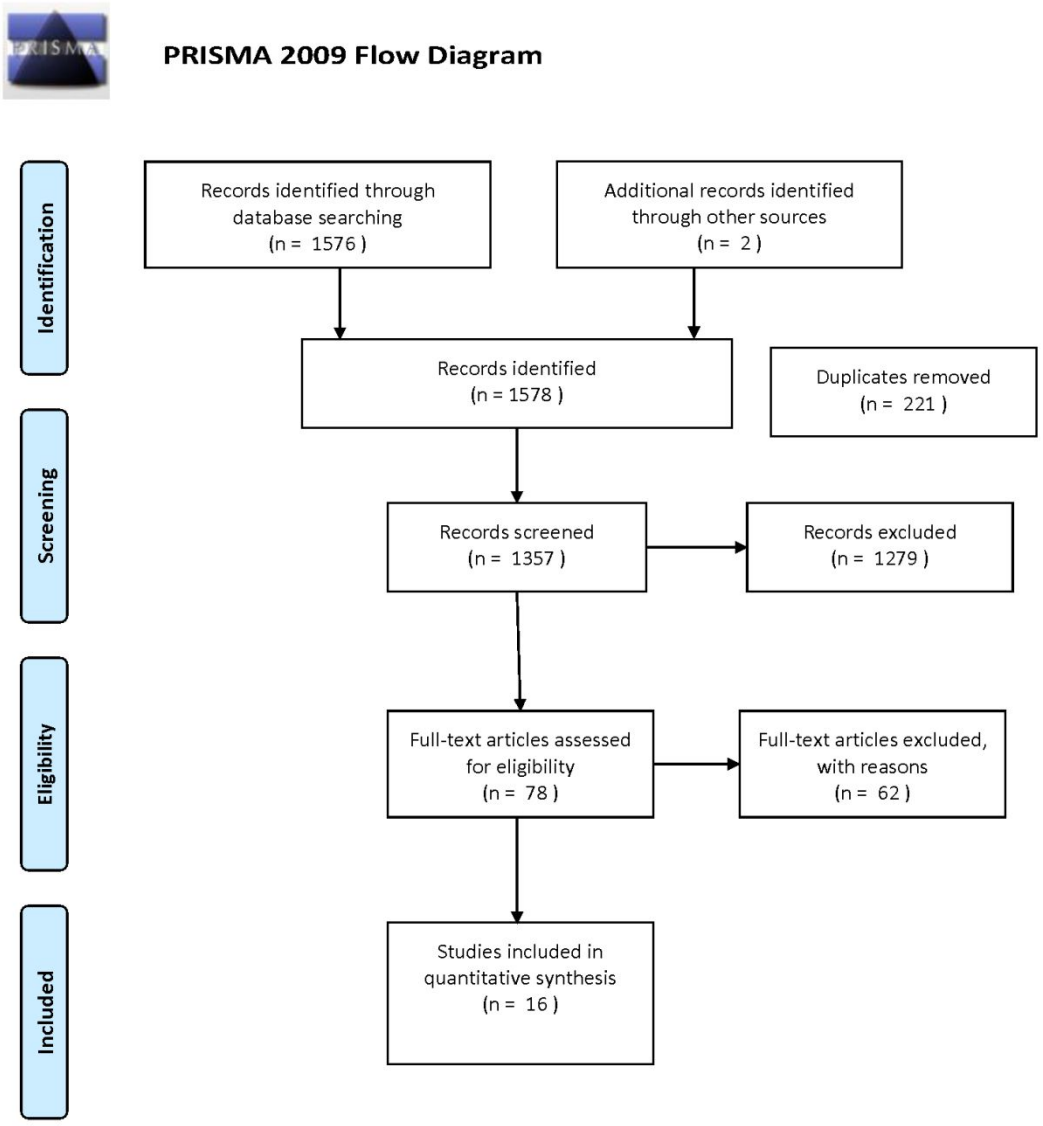
Author and Setting	Theoretical Framework	Participants (n)	Intervention Condition	Control Condition	Contextualization
Allen, 2004[19] Community	Not described	(I) 190 Patients (C) 190 patients	Actors: Nurses and Interdisciplinary team Actions: Nurses performed assessment within 1-week of discharge and an Interdisciplinary post stroke consultation team developed individual care plan. Training: Standard education and intervention protocols for stroke	Usual care (multidisciplinary care plan).	Nil
Bayley, 2018[20] and Salbach, 2017[9] Sub-Acute Hospital	Knowledge to Action Cycle	(I) 10 sites, 169 patients (C) 10 sites, 143 patients	Actors: Two local facilitators per site, one nurse and one therapist Actions: Facilitators ran local workshops on 'barriers' and strategies for clinical practice change. Training of actors: a 2-day face-to-face workshop Dose of Facilitation: 4 hours per week over a 16-month period Resources provided: Booklets and reminder cards of treatment protocols.	Resources. Booklet without treatment protocols, a book and a 2- hour DVD on measurement of stroke outcomes. Clinicians could join a list serve to ask questions and share experiences	Yes. Barrier identification
Jones, 1998[21] Hospital	Not described	(I) 30 nurses, 23 patients (C) 29 nurses, 15 patients	Actors: Nurses Actions: Lectures Dose: Two 2-hour face-to-face training sessions Resources: Workbook.	Usual care.	Nil
Jones, 2005[22] Hospital	Not described	(I) 5 Stroke units, 68 patients (C) 5 Stroke units, 52 patients	Actors: Nurses Actions: Education session Dose: One day face-to-face workshop Resources: Workbook, opinion leaders	Usual care.	Nil
Lakshminarayan 2010[23] Hospital	Not described	(I) 9 hospitals	Actors: Multidisciplinary team and hospital managers Actions: Site facilitation, audit and written feedback, Resources: opinion leaders	Audit and written feedback of baseline performance.	Customized feedback.

Author and Setting	Theoretical Framework	Participants (n)	Intervention Condition	Control Condition	Contextualization
		(C) 10 hospitals			Barriers addressed.
Lynch 2015[33]	Grol and Wensing 'Implementation for change'	(I) 5 hospitals (C) 5 hospitals	Actors: Multidisciplinary team Actions: Workshops, site facilitation, audit and feedback Dose: Over 2 weeks – one-hour education and then 2x30 minute for audit and feedback. One additional hour workshop for barrier identification. Resources: Site champions, reminders, choice of site visits or education	One 30-minute education session and provision of hardcopies of intervention tool and access to online resources.	Barrier identification and local strategy development session with feedback.
McCluskey 2016[32] Community	Not described	(I) 11 teams, 164 patients (C) 10 teams, 115 patients	Actors: Health care team Actions: One workshop, audit and feedback Dose: 2-hour face-to-face workshop and 1-hour booster at 12 months Resources: Provision guidelines and target recommendations with training materials	Sent clinical guideline by mail.	Local feedback
Middleton 2011[24] Hospital	Not described	(I) 10 stroke units, 1294 patients (C) 9 stroke units, 951 patients	Actors: Multidisciplinary team Actions: Site facilitation, workshops Dose: 2 Face-to-face and site visits Resources: Site champions, reminders (phone/email)	Received abridged version of existing guidelines.	Workshops addressed local barriers
Panella 2012[25] Hospital	Not described	(I) 7 stroke units, 238 patients (C) 7 stroke units, 238 patients	Actors: Multidisciplinary team Actions: Workshops, site facilitation Dose: 3-day face-to-face training in quality improvement of clinical pathways Resources: Evidence-based key intervention and indicator information.	Usual care.	Organizational adaptation of Clinical Pathways
Pennington[26] 2005 Hospital	Diffusion of Innovation	(I) 8 SLP departments, 708 patients	Actors: Speech and language pathologists Actions: Workshops Dose: Five-day face-to-face training on the critical appraisal of published research studies and practice guidelines and 2.5 days training on change management.	2.5 days face-to-face training on the critical appraisal of published research studies and practice guidelines.	Choice of guideline implemented as per local action plan.

Author and Setting	Theoretical Framework	Participants (n)	Intervention Condition	Control Condition	Contextualization
		(C) 9 SLP departments, 762 patients	Resources: nil		
Power 2014[27] Hospital	Quality Improvement Collaborative using 'model for Improvement'	(I) 10 hospitals, 3533 patients (C)11 hospitals, 3059 patients	Actors: Multidisciplinary team Actions: Workshops, site facilitation (mentorship and opinion leader), weekly meeting and monthly review of progress Dose: Four days face-to-face training Resources: Web-based portal	Usual care.	Local feasibility, reliability and evidence
Ranta 2015[28] Community	Not described	(I) 29 clinics, 119 patients (C) 27 clinics, 192 patients)	Actors: General medical practitioners Actions: Workshops Dose: one-day training in electronic support tools and one hour face-to-face didactic education session Resources: Electronic reminders	One hour face-to-face didactic education session. Usual care	Nil
Strasser 2008[29] Rehab	Treatment, Implementation Delivery, Receipt and enactment (Lichenstein)	(I) 15 Medical centres, 227 staff, 439 patients (C) 16 Medical centres, 237 staff, 350 patients	Actors: Multidisciplinary Actions: Site facilitation, workshops, audit and feedback Dose: 2.5-day face-to-face workshops, Resources: nil	Audit and feedback.	Site specific performance with recommendations
Sulch 2000[30] Rehab	Not described	(I) 76 Patients (C) 76 Patients	Actors: Multidisciplinary team Actions: Site facilitation (opinion leader), team meetings Dose: over 3-months Resources: nil	Conventional multidisciplinary care	
van Peppen, 2009[18] Acute and rehab	Theories by Ajzen and Grol	(I) 15 Clinicians (C) 15 Clinicians	Actors: Physical Therapists Actions: Educational workshop facilitated by expert tutor Dose: 5x2-hour sessions over 14 weeks Resources: nil	Actions: Educational workshop facilitated by non-expert tutor	

Author and Setting	Theoretical Framework	Participants (n)	Intervention Condition	Control Condition	Contextuali-zation
Williams 2015[31] Hospital	Not described	(I) 6 hospitals, 1147 patients (C) 6 hospitals, 1017 patients	Actors: Multidisciplinary team Actions: Site facilitation (Mentorship), workshops, audit and feedback Dose: Face-to-face training sessions, monthly and quarterly feedback Resources: nil	Feedback only.	Identification of operational barriers

I=intervention, C= control



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

Figure 1. Prisma flow chart of study screening

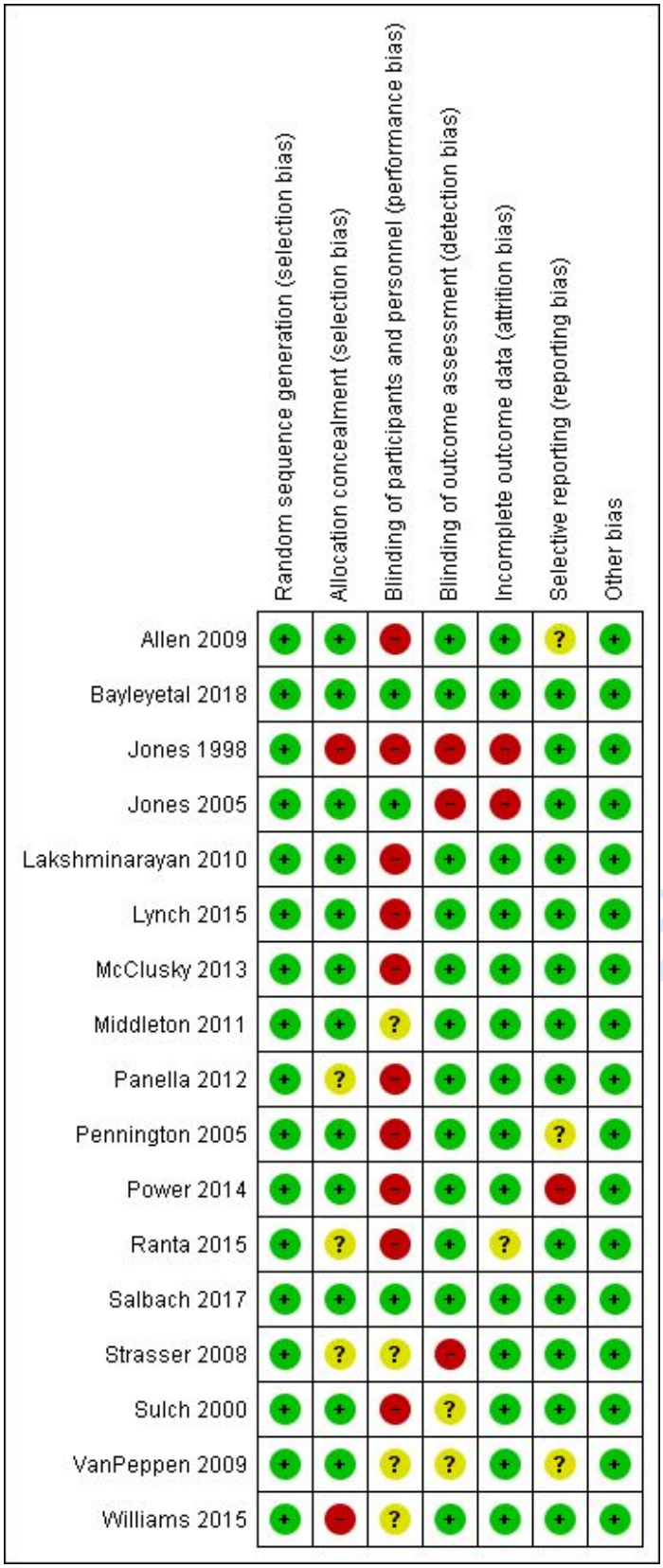


Figure 2. Risk of Bias of included studies

APPENDIX 1 Search Strategy

APPENDIX 1i: Search Strategy for EMBASE(OVID host) SEARCH SYNTAX

({[stroke] + [rehabilitation]} + [KT]) + ([education/modalities] or [outcomes])

Concept: Stroke and Rehab
1. exp Stroke/ (181,703)
2. stroke*.ti,ab. (347,912)
3. ((CVA or apoplexy or (cerebr* or brain)) adj3 (infarct* or stroke* or accident*)).ti,ab. (61,386)
4. 1 or 2 or 3 [stroke] (423,154)

Concept: Rehabilitation
5. rh.fs. (143,528)
6. rehab*.ti,ab. (211,333)
7. "physical and rehabilitation medicine".ti,ab. (495)
8. exp Rehabilitation/ or exp Physical Therapy Modalities/ (415,706)
9. ("physical therap*" or physiotherap* or "occupational therap*" or "speech therap*" or "speech patholog*" or "language therap*" or "language patholog*" or "recreation* therap*" or "social worker*" or nurs* or dietic* or physician* or physiatrist* or neurolog*).ti,ab. (1,422,947)
10. Health Personnel/ or Allied Health Personnel/ or Community Health Workers/ or Dental Auxiliaries/ or Dental Assistants/ or Dental Hygienists/ or Dental Technicians/ or Denturists/ or Licensed Practical Nurses/ or Nurses' Aides/ or Physical Therapist Assistants/ or Audiologists/ or Caregivers/ or Dental Staff/ or Dental Staff, Hospital/ or Dentists/ or Faculty, Dental/ or Faculty, Medical/ or Faculty, Nursing/ or Health Educators/ or Medical Staff/ or Medical Staff, Hospital/ or Hospitalists/ or Nurses/ or Nursing Staff/ or Nutritionists/ or Occupational Therapists/ or Pharmacists/ or Physical Therapists/ or Physicians/ or General Practitioners/ or Geriatricians/ or Neurologists/ or Physiatrists/ or Physicians, Family/ or Nursing/ or Dietician/ or Social Work/ (932,961)
11. 5 or 6 or 7 or 8 or 9 or 10 [rehabilitation] (2,424,149)

Concept: Knowledge Translation
12. (knowledge adj2 (application* or apply or applies or applying or broke* or creation or diffus* or disseminat* or exchang* or implement* or management or mobili* or translat* or transfer* or uptak* or utili*)).ti,ab. (20,189)
13. (evidence* adj2 (exchang* or translat* or transfer* or diffus* or disseminat* or implement* or management or mobil* or uptak* or utili*)).ti,ab. (16,716)
14. ((KT or knowledge) adj2 (application* or apply or applies or applying or broke* or diffus* or disseminat* or decision* or exchang* or implement* or intervent* or mobili* or plan* or policy or policies or strateg* or translat* or transfer* or uptak* or utili*)).ti,ab. (22,464)
15. (research* adj2 (diffus* or disseminat* or exchang* or transfer* or translation* or application* or apply or applies or applying or implement* or mobil* or transfer* or uptak* or utili*)).ti,ab. (35,968)
16. ("research findings into action" or "research to action" or "research into action" or "evidence to action" or "evidence to practice" or "evidence into practice").ti,ab. (14,650)
17. ("research utilis*" or "research utiliz*" and ("decision mak*" or "decision-mak*" or "policy mak*" or "policy-mak*" or "policy decision*" or "health* polic*" or practice or action*1)).ti,ab. (605)
17. Diffusion of Innovation/ or (diffusion adj2 innovation).ti,ab. (12,713)
19. (leader* adj1 (opinion or educat* or influen*)).ti,ab. (2,736)
20. (("systematic review*" or "knowledge synthes*") adj5 ("decision mak*" or "policy mak*" or "policy decision*" or "health polic*")).ti,ab. (510)

21. (("systematic review*" or "knowledge synthes*") adj2 (application* or implement* or utili*ation or utilize* or utilise* or utili*ing)).ti,ab. (421)
22. "research utili*ation".ti,ab. (672)
23. ("evidence base*" or "evidence inform*") adj5 (decision* or plan* or policy or policies or practice or action*).ti,ab. (26,307)
24. ("decision support system*" or reminder* or "multidisciplinary team*" or researcher-clinician* or mentor* or "opinion leader*").ti,ab. (68,523)
25. Decision Support Systems/ or Decision Support Techniques/ or Mentor/ or Leadership/ or Reminder System/ (78,987)
26. 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 [KT] (245,821)

Concept: Education/ Modalities
27. (educat* adj2 (continuing or nurs* or physician* or professional or medical)).ti,ab. (95,755)
28. Clinical Protocols/ or Clinical Practice/ or Pamphlets/ or Audiovisual Aids/ or Manuals as Topic/ or Inservice Training/ or Health Education/ or Consumer Health Information/ or Patient Education/ (835,546)
29. (class* or workshop* or "audiovisual aid*" or "inservice training" or leaflets).ti,ab. (1,664,745)
30. 27 or 28 or 29 or 30 [education/modalities] (2,529,813)
Concept: Outcomes
31. Health Knowledge, Attitudes, Practice/ or Practice Guidelines as Topic/ or "Attitude of Health Personnel"/ or Patient Care/ or Patient Care Planning/ or Guideline Adherence/ (664,483)
32. ((clinic* or practice) adj3 (behavio*r* or attitude* or knowledge or pathway or guideline*)).ti,ab. (123,922)
33. (patient or health) adj2 ("care planning").ti,ab. (1,257)
34. 31 or 32 or 33 [outcomes] (754,605)

RESULTS
35. 4 and 11 [stroke and rehabilitation] (111,649)
36. 35 and 26 [stroke and rehabilitation] and [KT] (2,544)
37. 30 or 34 [education/modalities] or [outcomes] (3,111,092)
38. 36 and 37 {[stroke and rehabilitation] and [KT]} and {[education/modalities] or [outcomes]} (1,204)
39. Limit 38 to (English language and yr="1980-current") (1,171)

APPENDIX 1ii: Search Strategy for MEDLINE (OVID host) SEARCH SYNTAX

Search Strategy:
({[stroke] + [rehabilitation]} + [KT]) + ([education/modalities] or [outcomes])

Concept: Stroke and Rehab
1. exp Stroke/ (120,092)
2. stroke*.ti,ab. (221,369)
3. ((CVA or apoplexy or (cerebr* or brain)) adj3 (infarct* or stroke* or accident*)).ti,ab. (41,917)
4. 1 or 2 or 3 [stroke] (268,336)

Concept: Rehabilitation
5. rh.fs. (188,649)

6. rehab*.ti,ab. (151,032)
7. "physical and rehabilitation medicine".ti,ab. (336)
8. exp Rehabilitation/ or exp Physical Therapy Modalities/ (288,786)
9. ("physical therap*" or physiotherap* or "occupational therap*" or "speech therap*" or "speech patholog*" or "language therap*" or "language patholog*" or "recreation* therap*" or "social worker*" or nurs* or dietic* or physician* or physiatrist* or neurolog*).ti,ab. (1,099,853)
10. Health Personnel/ or Allied Health Personnel/ or Community Health Workers/ or Dental Auxiliaries/ or Dental Assistants/ or Dental Hygienists/ or Dental Technicians/ or Denturists/ or Licensed Practical Nurses/ or Nurses' Aides/ or Physical Therapist Assistants/ or Audiologists/ or Caregivers/ or Dental Staff/ or Dental Staff, Hospital/ or Dentists/ or Faculty, Dental/ or Faculty, Medical/ or Faculty, Nursing/ or Health Educators/ or Medical Staff/ or Medical Staff, Hospital/ or Hospitalists/ or Nurses/ or Nursing Staff/ or Nutritionists/ or Occupational Therapists/ or Pharmacists/ or Physical Therapists/ or Physicians/ or General Practitioners/ or Geriatricians/ or Neurologists/ or Physiatrists/ or Physicians, Family/ or Nursing/ or Dietician/ or Social Work/ (391,897)
11. 5 or 6 or 7 or 8 or 9 or 10 [rehabilitation] (1,752,670)

Concept: Knowledge Translation
12. (knowledge adj2 (application* or apply or applies or applying or broke* or creation or diffus* or disseminat* or exchang* or implement* or management or mobili* or translat* or transfer* or uptak* or utili*)).ti,ab. (15,257)
13. (evidence* adj2 (exchang* or translat* or transfer* or diffus* or disseminat* or implement* or management or mobil* or uptak* or utili*)).ti,ab. (13,007)
14. ((KT or knowledge) adj2 (application* or apply or applies or applying or broke* or diffus* or disseminat* or decision* or exchang* or implement* or intervent* or mobili* or plan* or policy or policies or strateg* or translat* or transfer* or uptak* or utili*)).ti,ab. (17,224)
15. (research* adj2 (diffus* or disseminat* or exchang* or transfer* or translation* or application* or apply or applies or applying or implement* or mobil* or transfer* or uptak* or utili*)).ti,ab. (28,213)
16. ("research findings into action" or "research to action" or "research into action" or "evidence to action" or "evidence to practice" or "evidence into practice").ti,ab. (11,865)
17. ("research utilis*" or "research utiliz*" and ("decision mak*" or "decision-mak*" or "policy mak*" or "policy-mak*" or "policy decision*" or "health* polic*" or practice or action*1)).ti,ab. (571)
18. Diffusion of Innovation/ or (diffusion adj2 innovation).ti,ab. (17,110)
19. (leader* adj1 (opinion or educat* or influen*)).ti,ab. (2,166)
20. (("systematic review*" or "knowledge synthes*") adj5 ("decision mak*" or "policy mak*" or "policy decision*" or "health polic*")).ti,ab. (383)
21. (("systematic review*" or "knowledge synthes*") adj2 (application* or implement* or utili*ation or utilize* or utilise* or utili*ing)).ti,ab. (345)
22. "research utili*ation".ti,ab. (683)
23. ("evidence base*" or "evidence inform*") adj5 (decision* or plan* or policy or policies or practice or action*).ti,ab. (21,155)
24. ("decision support system*" or reminder* or "multidisciplinary team*" or researcher-clinician* or mentor* or "opinion leader*").ti,ab. (45,403)
25. Decision Support Systems/ or Decision Support Techniques/ or Mentor/ or Leadership/ or Reminder System/ (68,826)
26. 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 [KT] (196,401)

Concept: Education/ Modalities
27. (educat* adj2 (continuing or nurs* or physician* or professional or medical)).ti,ab. (85,323)

28. Clinical Protocols/ or Clinical Practice/ or Pamphlets/ or Audiovisual Aids/ or Manuals as Topic/ or Inservice Training/ or Health Education/ or Consumer Health Information/ or Patient Education as Topic/ or Teach-Back Communication/ (195,717)
29. (class* or workshop* or "audiovisual aid*" or "inservice training" or leaflets).ti,ab. (1,288,304)
30. 27 or 28 or 29 [education/modalities] (1,550,262)

Concept: Outcomes
31. Health Knowledge, Attitudes, Practice/ or Practice Guidelines as Topic/ or "Attitude of Health Personnel"/ or Patient Care/ or Patient Care Planning/ or Guideline Adherence/ (366,943)
32. ((clinic* or practice) adj3 (behavio* or attitude* or knowledge or pathway or guideline*)).ti,ab. (88,398)
33. (patient or health) adj2 ("care planning").ti,ab. (967)
34. 31 or 32 or 33 [outcomes] (432,339)

Results
35. 4 and 11 [stroke and rehabilitation] (62,884)
36. 35 and 26 [stroke and rehabilitation] and [KT] (1,114)
37. 30 or 34 [education/modalities] or [outcomes] (1,916,360)
38. 36 and 37 {[stroke and rehabilitation] and [KT]} and {[education/modalities] or [outcomes]} (422)
39. limit 38 to (English language and yr="1980-current")(407)

APPENDIX 1iii: Search Strategy for CINAHL (EBSCOhost)

Concept: Stroke and Rehabilitation

S1 (MH "Stroke+") (59,623)

S2 stroke (98,475)

S3 cerebral infarct* or brain infarct* (5,003)

S4 brain accident* or cerebral accident* (527)

S5 cerebral vascular accident or CVA (937)

S6 S1 OR S2 OR S3 OR S4 OR S5 [stroke] (101,044)

S7 occupational therap* (39,496)

S8 physical therap* or physiotherap* (69,155)

S9 speech language patholog* (13,534)

S10 speech language therap* (2,641)

S11 neurolog* (68,450)

S12 physician* (08,011)

S13 physiatrist* (636)

S14 nurs* (818,719)

S15 rehab* (160,639)

S16 (MH "Occupational Therapy+") OR (MH "Rehabilitation+") OR (MH "Physical Therapy+") OR (MH “Neurology+”) OR (MH “Physiatry+”) OR (MH “Nursing+”) OR (MH “Recreational Therapy+”) OR (MH “Social Work+”) (269,197)

Concept: Knowledge Translation

S17 knowledge mediation or knowledge transfer or knowledge exchange or knowledge uptake or knowledge translat* or knowledge mobili?* (4,734)

S18 research mediation or research transfer or research translat* or research exchange or research uptake (6,332)

S19 (MH "Diffusion of Innovation") (12,042)

S20 (MH "Selective Dissemination of Information") (39)

S21 (MH "Professional Practice, Evidence-Based+") (69,427)

S22 (MH "Information Management+") OR (MH "Knowledge Management+") (10,968)

S23 S17 OR S18 OR S19 OR S20 OR S21 OR S22 [KT] (98,194)

Concept: Intervention Modalities

S24 workshop* (23,237)

S25 (MH "Information Resources+") (418,381)

S26 inservice* (846)

S27 (MH "Education, Non-Traditional+") (9,029)

S28 (MH "Audiovisuals+") (102,400)

S29 (MH "Seminars and Workshops+") (14,644)

S30 (MH "Education, Continuing+") (30,553)

S31 (MH "Professional Practice+") (253,482)

S32 S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 [modalities] (687,657)

Concept: Outcomes

S33 clinician* behavio?r* or clinician* attitude* or clinician* knowledge (1,969)

S34 practice behavio?r* or practice attitude* or practice knowledge (17,107)

S35 (MH "Attitude of Health Personnel+") (82,040)

S36 (MH "Professional Knowledge+") OR (MH "Health Knowledge+") (41,459)

S37 (MM "Practice Guidelines") (25,062)

S38 (MM "Guideline Adherence") (5,687)

S39 (MM "Critical Path") (2,938)

S40 (MM "Patient Care Plans") (2,193)

S41 S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 [outcomes] (163,466)

S42 S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 [rehab] (1,398,831)

Results

S43 S6 AND S42 {stroke and rehabilitation} (32,725)

S44 S23 AND S43 [{stroke and rehabilitation} and KT] (995)

S45 S32 OR S41 [outcomes or modalities] (803,804)

S46 S44 AND S45 stroke and rehabilitation} and KT and [outcomes or modalities] (911)

S46 limit to english language (870)

APPENDIX 1iv: Search Strategy for COCHRANE CENTRAL (OVID host) SEARCH SYNTAX

Search Strategy:
({[stroke] + [rehabilitation]} + [KT]) + ([education/modalities] or [outcomes])

Concept: Stroke and Rehab
1. exp Stroke/ (7,829)
2. stroke*.ti,ab. (36,925)
3. ((CVA or apoplexy or (cerebr* or brain)) adj3 (infarct* or stroke* or accident*)).ti,ab. (4,449)
4. 1 or 2 or 3 [stroke] (39,933)

Concept: Rehabilitation
5. rh.fs. (16,542)
6. rehab*.ti,ab. (22,092)
7. "physical and rehabilitation medicine".ti,ab. (22)
8. exp Rehabilitation/ or exp Physical Therapy Modalities/ (31,597)
9. ("physical therap*" or physiotherap* or "occupational therap*" or "speech therap*" or "speech patholog*" or "language therap*" or "language patholog*" or "recreation* therap*" or "social worker*" or nurs* or dietic* or physician* or physiatrist* or neurolog*).ti,ab. (69,173)
10. Health Personnel/ or Allied Health Personnel/ or Community Health Workers/ or Dental Auxiliaries/ or Dental Assistants/ or Dental Hygienists/ or Dental Technicians/ or Denturists/ or Licensed Practical Nurses/ or Nurses' Aides/ or Physical Therapist Assistants/ or Audiologists/ or Caregivers/ or Dental Staff/ or Dental Staff, Hospital/ or Dentists/ or Faculty, Dental/ or Faculty, Medical/ or Faculty, Nursing/ or Health Educators/ or Medical Staff/ or Medical Staff, Hospital/ or Hospitalists/ or Nurses/ or Nursing Staff/ or Nutritionists/ or Occupational Therapists/ or Pharmacists/ or Physical Therapists/ or Physicians/ or General Practitioners/ or Geriatricians/ or Neurologists/ or Physiatrists/ or Physicians, Family/ or Nursing/ or Dietician/ or Social Work/ (6,405)
11. 5 or 6 or 7 or 8 or 9 or 10 [rehabilitation] (117,874)

Concept: Knowledge Translation
12. (knowledge adj2 (application* or apply or applies or applying or broke* or creation or diffus* or disseminat* or exchang* or implement* or management or mobili* or translat* or transfer* or uptak* or utili*)).ti,ab. (1,124)
13. (evidence* adj2 (exchang* or translat* or transfer* or diffus* or disseminat* or implement* or management or mobil* or uptak* or utili*)).ti,ab. (1,750)
14. ((KT or knowledge) adj2 (application* or apply or applies or applying or broke* or diffus* or disseminat* or decision* or exchang* or implement* or intervent* or mobili* or plan* or policy or policies or strateg* or translat* or transfer* or uptak* or utili*)).ti,ab. (2,208)

15. (research* adj2 (diffus* or disseminat* or exchang* or transfer* or translation* or application* or apply or applies or applying or implement* or mobil* or transfer* or uptak* or utili*)).ti,ab. (2, 055)
16. ("research findings into action" or "research to action" or "research into action" or "evidence to action" or "evidence to practice" or "evidence into practice").ti,ab. (183)
17. ("research utilis*" or "research utiliz*" and ("decision mak*" or "decision-mak*" or "policy mak*" or "policy-mak*" or "policy decision*" or "health* polic*" or practice or action*1)).ti,ab. (23)
18. Diffusion of Innovation/ or (diffusion adj2 innovation).ti,ab. (148)
19. (leader* adj1 (opinion or educat* or influen*)).ti,ab. (189)
20. (("systematic review*" or "knowledge synthes*") adj5 ("decision mak*" or "policy mak*" or "policy decision*" or "health polic*")).ti,ab. (15)
21. (("systematic review*" or "knowledge synthes*") adj2 (application* or implement* or utili*ation or utilize* or utilise* or utili*ing)).ti,ab. (10)
22. "research utili*ation".ti,ab. (21)
23. ("evidence base*" or "evidence inform*") adj5 (decision* or plan* or policy or policies or practice or action*).ti,ab. (1,237)
24. ("decision support system*" or reminder* or "multidisciplinary team*" or researcher-clinician* or mentor* or "opinion leader*").ti,ab. (5,031)
25. Decision Support Systems/ or Decision Support Techniques/ or Mentor/ or Leadership/ or Reminder System/ (1,887)
26. 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 [KT] (13,069)

Concept: Education/ Modalities
27. (educat* adj2 (continuing or nurs* or physician* or professional or medical)).ti,ab. (2,903)
28. Clinical Protocols/ or Clinical Practice/ or Pamphlets/ or Audiovisual Aids/ or Manuals as Topic/ or Inservice Training/ or Health Education/ or Consumer Health Information/ or Patient Education as Topic/ or Teach-Back Communication/ (17,093)
29. (class* or workshop* or "audiovisual aid*" or "inservice training" or leaflets).ti,ab. (49,481)
30. 27 or 28 or 29 or 30 [education/modalities] (67,442)

Concept: Outcomes
31. Health Knowledge, Attitudes, Practice/ or Practice Guidelines as Topic/ or "Attitude of Health Personnel"/ or Patient Care/ or Patient Care Planning/ or Guideline Adherence/ (9,397)
32. ((clinic* or practice) adj3 (behavio* or attitude* or knowledge or pathway or guideline*)).ti,ab. (7,106)
33. (patient or health) adj2 ("care planning").ti,ab. (37)
34. 31 or 32 or 33 [outcomes] (15,700)

Results
35. 4 and 11 [stroke and rehabilitation] (9,985)
36. 35 and 26 [stroke and rehabilitation] and [KT] (209)
37. 30 or 34 [education/modalities] or [outcomes] (78,229)
38. 36 and 37 {[stroke and rehabilitation] and [KT]} and {[education/modalities] or [outcomes]} (69)
39. limit 38 to (English language and yr="1980-current")(52)

APPENDIX 2:

Screening Tool - Inclusion criteria checklist for reviewing full text articles

First Author/ year:	Reviewer:
Study Objectives:	
Study Inclusion/ Exclusion Criteria:	
Type of Study Design: Is the study design an RCT? Comments:	☐ Yes ☐ No
Type of Clinician: Does the study include ANY of the following professionals working in the field of STROKE patient care at any stage in the continuum of patient care? ☐ Physical Therapist ☐ Occupational Therapist ☐ Nurse ☐ Physiatrist ☐ Physician ☐ Speech Language Pathologist ☐ Dietician ☐ Social Work ☐ Neurologist ☐ Recreation therapist Comments:	☐ Yes ☐ No ☐ Uncertain
Type of Setting: Does the study take place in ANY of the following locations or settings? ☐ Inpatient (acute, sub-acute, long term care) ☐ Outpatient (private/ public/ community) ☐ Rehabilitation Centre Comments:	☐ Yes ☐ No ☐ Uncertain
Type of Intervention: Does the study include the implementation of a KT intervention including ALL of the following objectives? ☐ The intervention targets clinicians (as defined above) ☐ The intervention is a Professional Intervention and/ or Organizational Intervention defined by the EPOC Taxonomy ☐ The intervention modality includes one or more of the following: education session, lecture, workshop, in-service, manual, pamphlets/ information package, or computer/ audiovisual format/or reminder or multidisciplinary team or clinical or patient decision tool or researcher-clinician intervention or local opinion leader or audit or consensus process or case discussion or mentoring or Comments:	☐ Yes ☐ No ☐ Uncertain

Type of Outcome Measure: Does the study report quantitative or qualitative assessed change in ANY of the following outcomes? ☐ Clinician practice behavior ☐ Clinician adherence to practice guidelines ☐ Clinician knowledge of or attitudes to practice standards ☐ Clinician use of evidence in practice ☐ Clinician use of evidence in policy making ☐ Clinician practice competency ☐ Patient outcomes Comments:	☐ Yes ☐ No ☐ Uncertain
Other: Does the paper comply with ALL of the following criteria? ☐ Original article written in English ☐ Peer-reviewed article ☐ Published between 1980 to current ☐ Study included n > 5 at study completion Comments:	☐ Yes ☐ No ☐ Uncertain
Total number of questions answered “yes”:	/6
Selection Criteria ☐ Exclude study (Answered “no” to one or more of the above six questions) ☐ Include study as background information (Answered “no” to one or more of the above six questions; however, provides relevant information for study background and rationale) ☐ Include study for systematic review (Answered “yes” to all of the above six questions)	