CANADIAN STROKE BEST PRACTICE RECOMMENDATIONS

Rehabilitation and Recovery following Stroke Evidence Tables

Rehabilitation to Improve Communication

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on Behalf of the Canadian Stroke Best Practice Recommendations
Rehabilitation and Recovery following Stroke Writing Group

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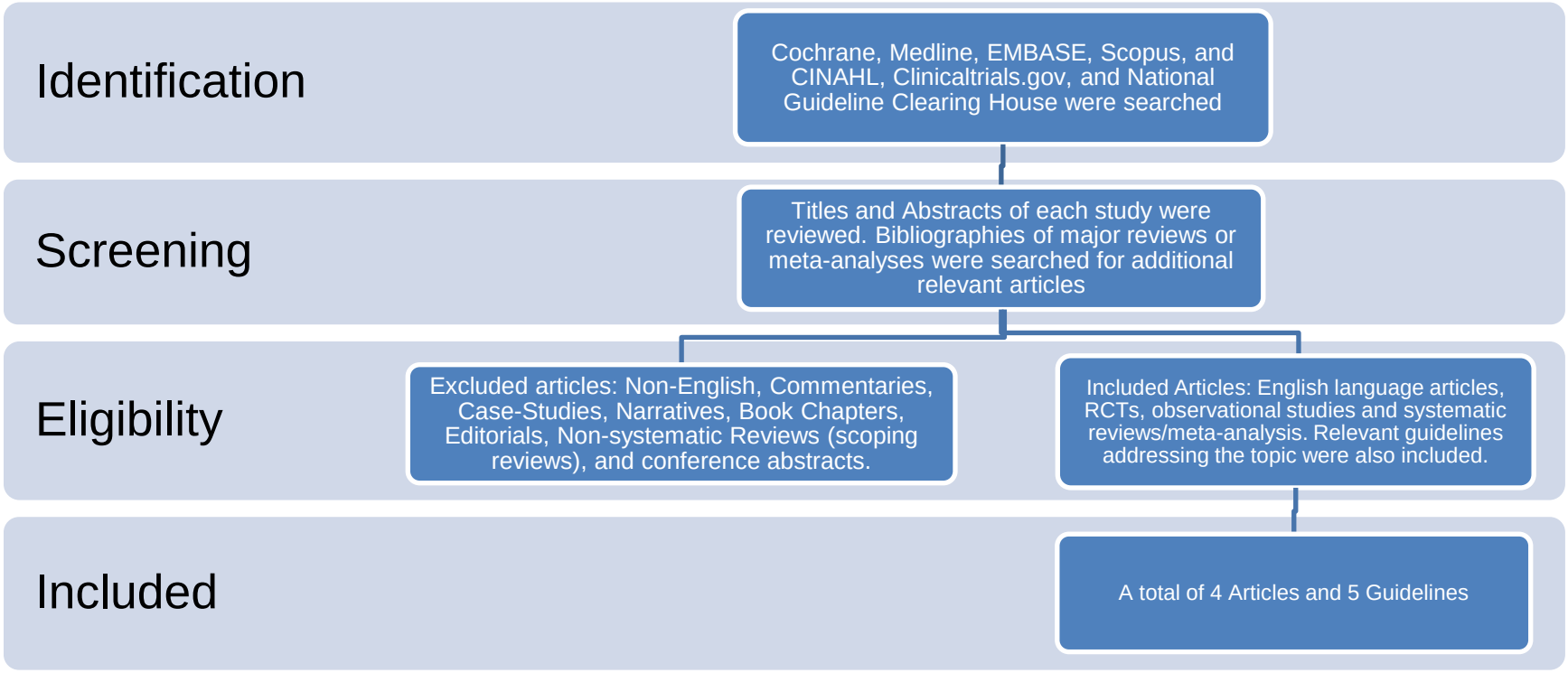
Search Strategy



Cochrane, Medline, and CINAHL, Clinicaltrials.gov, and National Guideline Clearing House, Scopus and EMBASE were searched using the key terms: Stroke AND (rehabilitation OR therapy OR intervention OR “assistive devices”) AND (communication OR aphasia OR speech OR language OR “speech-language” OR conversation OR discourse OR reading OR writing). Titles and abstract of each article were reviewed for relevance. Bibliographies were reviewed to find additional relevant articles. Articles were excluded if they were: non-English, commentaries, case-studies, narrative, book chapters, editorials, non-systematic review, or conference abstracts. Additional searches for relevant best practice guidelines were completed and included in a separate section of the review. A total of 4 articles and 5 guidelines were included and were separated into categories designed to answer specific questions.

Published Guidelines

Guideline	Recommendations
Clinical Guidelines for Stroke Management 2017. Melbourne (Australia): National Stroke Foundation. **(selected)**	Strong Recommendation For stroke survivors with aphasia, speech and language therapy should be provided to improve functional communication. Weak Recommendation For stroke survivors with aphasia, intensive aphasia therapy (at least 45 minutes of direct language therapy for five days a week) may be used in the first few months after stroke. Weak Recommendation AGAINST Brain stimulation (transcranial direct current stimulation or repetitive transcranial magnetic stimulation), with or without traditional aphasia therapy, should not be used in routine practice for improving speech and language function and only used as part of a research framework.
National Clinical guidelines for stroke" 5th Edition 2016; Intercollegiate Stroke Working Party. Royal College of Physicians	**Aphasia** A People with communication problems after stroke should be assessed by a speech and language therapist to diagnose the problem and to explain the nature and implications to the person, their family/carers and the multidisciplinary team. Reassessment in the first four months should only be undertaken if the results will affect decision-making or are required for mental capacity assessment. B In the first four months after stroke, people with aphasia should be given the opportunity to practise their language and communication with a speech and language therapist or other communication partner as frequently as tolerated. C After the first four months, people with communication problems after stroke should be reviewed to determine their suitability for further treatment with the aim of increasing participation in communication and social activities. This may involve using an assistant or volunteer, family member or communication partner guided by the speech and language therapist, computer-based practice or other impairment-based or functional treatment. D People with communication problems after stroke should be considered for assistive technology and communication aids by an appropriately trained, experienced clinician. E People with aphasia after stroke whose first language is not English should be assessed and provided with information about aphasia and communication practice in their preferred language. F The carers and family of a person with communication problems after stroke, and health and social care staff, should receive information and training from a speech and language therapist which should enable communication partners to optimise engagement in rehabilitation, and promote autonomy and social participation. G People with persistent communication problems after stroke that limit their social activities should be offered information about local or national groups for people with aphasia, and referred as appropriate.
Winstein CJ, Stein J, Arena R, Bates B, Cherney LR, Cramer SC, Deruyter F, Eng JJ, Fisher B, Harvey RL, Lang CE, MacKay-Lyons M, Ottenbacher KJ, Pugh S, Reeves	Communication assessment should consist of interview, conversation, observation, standardized tests, or nonstandardized items; assess speech, language, cognitive, communication, pragmatics, reading, and writing; identify communicative strengths and weaknesses; and identify helpful compensatory strategies. Class I; LOE B

Guideline	Recommendations
MJ, Richards LG, Stiers W, Zorowitz RD; on behalf of the American Heart Association Stroke Council, Council on Cardiovascular and Stroke Nursing, Council on Clinical Cardiology, and Council on Quality of Care and Outcomes Research. **Guidelines for adult stroke rehabilitation and recovery: a guideline for healthcare professionals from the American Heart Association/American Stroke Association.** ***Stroke* 2016;47:e98–e169**	Telerehabilitation is reasonable when face-to-face assessment is impossible or impractical. Class IIa; LOE A Communication assessment may consider the individual's unique priorities using the ICF framework, including quality of life. Class IIb; LOE C
National Institute for Health and Care Excellence **Stroke Rehabilitation in Adults Clinical guideline. 2013** **UK**	**1.8 Communication** 1.8.1 Screen people after stroke for communication difficulties within 72 hours of onset of stroke symptoms. 1.8.2 Each stroke rehabilitation service should devise a standardized protocol for screening for communication difficulties in people after stroke 1.8.3 Refer people with suspected communication difficulties after stroke to a speech and language therapist for detailed analysis of speech and language impairments and assessment of their impact. 1.8.4 Provide appropriate information, education and training to the multidisciplinary stroke team to enable them to support and communicate effectively with the person with communication difficulties and their family or carer. 1.8.5 Speech and language therapy for people with stroke should be led and supervised by a specialist speech and language therapist working collaboratively with other appropriately trained people – for example, speech and language therapy assistants, carers and friends, and members of the voluntary sector. 1.8.6 Provide opportunities for people with communication difficulties after stroke to have conversation and social enrichment with people who have the training, knowledge, skills and behaviours to support communication. This should be in addition to the opportunities provided by families, carers and friends 1.8.7 Speech and language therapists should assess people with limited functional communication after stroke for their potential to benefit from using a communication aid or other technologies (for example, home-based computer therapies or smartphone applications). 1.8.8 Provide communication aids for those people after stroke who have the potential to benefit, and offer training in how to use them. 1.8.9 Tell the person with communication difficulties after stroke about community-based communication and support groups (such as those provided by the voluntary sector) and encourage them to participate. 1.8.10 Speech and language therapists should: • provide direct impairment-based therapy for communication impairments (for example, aphasia or dysarthria)

Guideline	Recommendations
	• help the person with stroke to use and enhance their remaining language and communication abilities • teach other methods of communicating, such as gestures, writing and using communication props • coach people around the person with stroke (including family members, carers and health and social care staff) to develop supportive communication skills to maximise the person's communication potential • help the person with aphasia or dysarthria and their family or carer to adjust to a communication impairment • support the person with communication difficulties to rebuild their identity • support the person to access information that enables decision-making. 1.8.11 When persisting communication difficulties are identified at the person's 6-month or annual stroke reviews, refer them back to a speech and language therapist for detailed assessment, and offer treatment if there is potential for functional improvement. 1.8.12 Help and enable people with communication difficulties after stroke to communicate their everyday needs and wishes, and support them to understand and participate in both everyday and major life decisions. 1.8.13 Ensure that environmental barriers to communication are minimised for people after stroke. For example, make sure signage is clear and background noise is minimised. 1.8.14 Make sure that all written information (including that relating to medical conditions and treatment) is adapted for people with aphasia after stroke. This should include, for example, appointment letters, rehabilitation timetables and menus. 1.8.15 Offer training in communication skills (such as slowing down, not interrupting, using communication props, gestures, drawing) to the conversation partners of people with aphasia after stroke.
The National Health and Medical Research Council funded Centre for Clinical Research Excellence in Aphasia Rehabilitation **Aphasia Rehabilitation Best Practice Statements 2014** **Australia** **www.aphasiapathway.com.au**	**Best Practice Statement: 5. Providing Intervention** 5.1 People with aphasia should be offered therapy to gain benefits in receptive and expressive language, and communication in everyday environment. (Level 1 Evidence) 5.2 People with chronic aphasia should be offered therapy to gain benefits in receptive and expressive language, and communication in everyday environments. (Level 1 Evidence0 5.3 People with aphasia post one month should have access to intensive aphasia rehabilitation if they can tolerate it (Level 1 Evidence) 5.4 People with aphasia earlier than one month post onset could have access to intensive aphasia rehabilitation if they can tolerate. (Level II Evidence) 5.5 Aphasia rehabilitation should: a) Be tailored to the needs of the person with aphasia and the nature of their communication difficulty (Level Evidence: Qual) b) Address the impact of aphasia on functional everyday activities, participation and quality of life including the impact upon relationships, vocation and leisure as appropriate from post-onset and over time for those chronemically affected. (Level 1 Evidence) c) Address the needs of family/carers (Level of Evidence: Qual)

Guideline	Recommendations
	d) Include information tailored to meet the needs of people with aphasia and their family/carers (Level of Evidence: Qual) e) Include communication partner training (Level 1 Evidence) 5.6 Aphasia rehabilitation <u>can</u> include: a) Treatment of aspects of language models derived from cognitive neuropsychology (Level 1 Evidence) i. Word retrieval deficits (Level IV Evidence) ii. Reading deficits (Level 1 Evidence iii. Writing deficits (Level 1 Evidence) b) Treatment of sentences comprehension and production impairments (Level III-3 Evidence) c) Discourse treatment (Level IV Evidence) d) Augmentative and alternative communication (Level IV Evidence) e) Constraint-induced language therapy (Level 1 Evidence) f) Gesture-based therapy (Level III-2 Evidence) 5.7 In addition to individual therapy delivered by speech pathologists aphasia rehabilitation my include: a) Group therapy and conservation groups (Level 1 Evidence) b) Computer-based treatments (Level II Evidence) c) Telerehabilitation (Level IV Evidence) d) Trained volunteers (Level I)

Evidence Tables

Speech and Language Therapy (SALT)

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Brady et al. 2016 **United Kingdom** **Cochrane Review**	N/A	57 RCTs, which consisted of 74 randomized comparisons and involved 3,002 participants. The included studies consisted of: 27 RCTS (1620 participants) comparing SLT to no SLT; 9 RCT (447 participants) comparing SLT to social support and stimulation; and 38 RCTs (1242 participants) compared two approaches to SLT. Time since stroke was variable and not always reported.	SLT was defined as "a formal intervention that aims to improve language communication abilities, activity and participation" Social support or stimulation included interventions that provides social support and communication stimulation but does not include targeted therapeutic interventions Comparison SLT intervention differed in duration, intensity, frequency, intervention methodology or theoretical approach.	**Primary outcome:** Measures of communication activity used in real world settings – Functional communication (e.g. Communicative Abilities of Daily Living, Communicative Effectiveness Index) **Secondary outcomes:** Surrogate outcome measures of communication impairment (or ability), including formal measures of receptive language (oral, written and gestural), expressive language (oral, written, and gestural) or overall level of severity of aphasia (e.g. Western Aphasia Battery, Porch Index of Communicative Abilities); Psychological impact (e.g. impact on psychological or social well-being including mood, depression, anxiety and distress); Satisfaction with intervention; Number of drop-outs; adherence to allocated intervention, economic outcomes; caregiver and family quality of life	<u>SLT vs no SLT</u>: SLT was significantly better at improving functional communication (SMD=0.28, 95% CI 0.06 to 0.49, p=0.01) • Receptive language: auditory comprehension: SMD: 0.06 (-0.15 to 0.026) • Receptive language: reading comprehension: SMD: 0.29 (0.03 to 0.55) – favours SLT • Expressive language: naming: SMD: 0.014 (-0.10 to 0.38) • Expressive language: general: SMD: 1.28 (0.38 to 2.19) – favours SLT • Expressive language: written: SMD: 0.41 (0.14 to 0.67) – Favours SLT Benefits (based on smaller numbers) were not evident at follow-up (approx. 6 months) <u>STL vs. social support and stimulation</u>: No evidence of a difference in function communication, but more participants withdrew (OR: 0.51; 0.32 to 0.82) from social support intervention than SLT <u>STL vs. another form of SLT</u>: • Functional communication was significantly better in people with aphasia that received therapy at high intensity, high dose, or over a long duration compared to those that received therapy at a lower intensity, lower dose or over a shorter period ***Functional communication:*** • High-intensity vs. low-intensity: MD: 11.75 (409 to 19.40) - favours high-intensity ○ Short duration vs. long duration: SMD: 0.81 (0.23 to 1.40) – favours long duration of therapy

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
					○ Group vs. individual: SMD: 0.41 (-0.19 to 1.00) ○ Computer-mediated vs. professional SLT: SMD: 0.44 (-0.10 to 0.98) ○ Constraint-induced aphasia vs. other SLT: SMD: 0.15 (-0.21 to 0.50) ***Severity of impairment:*** ○ High-intensity vs. low intensity: SMD: 0.38 (0.07 to 0.69) – favours high-intensity SLT ○ High dose vs. low dose: SMD: 0.35 (-0.16 to 0.85) ○ Short duration vs. long duration: SMD: 0.22 (-0.26 to 0.71) ○ Group SLT vs. individual: SMD: 0.15 (-0.21 to 0.50) ○ Constraint-induced therapy vs. other SLT: SMD: 0.11 (-0.51 to 0.79) Benefits of high intensity or a high dose of SLT were confounded by a significantly higher dropout rate in these intervention

Intensity of Speech and Language Therapy

Study/Type	Quality Rating	Sample Description	Method	Outcome	Key Findings and Recommendations
Brady et al. 2016 **United Kingdom** **Cochrane Review**	N/A	57 RCTs, which consisted of 74 randomized comparisons and involved 3,002 participants. The included studies consisted of: 27 RCTS (1620 participants) comparing SLT to no SLT; 9 RCT (447 participants) comparing SLT to social support and stimulation; and 38 RCTs (1242 participants) compared two approaches to SLT.	SLT was defined as "a formal intervention that aims to improve language communication abilities, activity and participation" Social support or stimulation included interventions that provides social support and communication stimulation but does not include targeted therapeutic interventions	**Primary outcome:** Measures of communication activity used in real world settings – Functional communication (e.g. Communicative Abilities of Daily Living, Communicative Effectiveness Index) **Secondary outcomes:** Surrogate outcome measures of communication impairment (or ability), including formal measures of receptive language (oral, written and gestural),	***Functional communication:*** ○ High-intensity vs. low-intensity: MD: 11.75 (409 to 19.40) - favours high-intensity ○ Short duration vs. long duration: SMD: 0.81 (0.23 to 1.40) – favours long duration of therapy ***Severity of impairment:*** ○ High-intensity vs. low intensity: SMD: 0.38 (0.07 to 0.69) – favours high-intensity SLT ○ High dose vs. low dose: SMD: 0.35 (-0.16 to 0.85) ○ Short duration vs. long duration: SMD: 0.22 (-0.26 to 0.71) Benefits of high intensity or a high dose of SLT were confounded by a significantly higher dropout rate in these intervention

Study/Type	Quality Rating	Sample Description	Method	Outcome	Key Findings and Recommendations
		Time since stroke was variable and not always reported.	Comparison SLT intervention differed in duration, intensity, frequency, intervention methodology or theoretical approach.	expressive language (oral, written, and gestural) or overall level of severity of aphasia (e.g. Western Aphasia Battery, Porch Index of Communicative Abilities); Psychological impact (e.g. impact on psychological or social well-being including mood, depression, anxiety and distress); Satisfaction with intervention; Number of drop-outs; adherence to allocated intervention, economic outcomes; caregiver and family quality of life	

Bhogal et al. 2003
 	
Canada
 	
Systematic Review
	N/A	10 studies (n=864) investigating speech language therapy for aphasia post-stroke. Studies that included patients with conditions other than stroke were excluded.	Systematic review of clinical trials examining speech language therapy for aphasia after stroke published was conducted. The literature search was current to 2002.
			
			Exposure of interests included:
			1. Length of therapy
			2. Hours of therapy provided per week
			3. Total hours of therapy provided
				Primary outcome:
				Aphasia recovery (measured by the Porch Index of Communicative Abilities [PICA] and
				Token Test)
					Effect by hours of therapy:
					Positive studies provided therapy for:
					• Mean of 8.8 hours per week for 11.2 weeks
					• An average of 98.4 hours of therapy (total)
					
					Negative studies provided therapy for:
					• Mean of 2 hours per week for 22.9 weeks.
					• An average of 43.6 hours of therapy (total)
					
					Association between intensity and recovery:
					Total hours of therapy & total hours of therapy a week showed:
					• Greater improvement on the PICA
					  ○ r=0.96, p<.01, for both hours per week and total hours of therapy
					• Greater improvement on the Token Test
					  ○ r=0.81, p<.05 for hours per week
					r=0.96, p<0.01 for total hours of therapy)

Volunteer-Facilitated Speech- Language Therapy

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Brady et al. 2016 **United Kingdom** **Cochrane Review**	N/A	57 RCTs, which consisted of 74 randomized comparisons and involved 3,002 participants. The included studies consisted of: 27 RCTS (1620 participants) comparing SLT to no SLT; 9 RCT (447 participants) comparing SLT to social support and stimulation; and 38 RCTs (1242 participants) compared two approaches to SLT. Time since stroke was variable and not always reported.	SLT was defined as "a formal intervention that aims to improve language communication abilities, activity and participation" Social support or stimulation included interventions that provides social support and communication stimulation but does not include targeted therapeutic interventions Comparison SLT intervention differed in duration, intensity, frequency, intervention methodology or theoretical approach.	**Primary outcome:** Measures communication activity in real world settings – Functional communication (e.g. Communicative Abilities of Daily Living, Communicative Effectiveness Index) **Secondary outcomes:** Surrogate outcome measures of communication impairment (or ability), including formal measures of receptive language (oral, written and gestural), expressive language (oral, written, and gestural) or overall level of severity of aphasia (e.g. Western Aphasia Battery, Porch Index of Communicative Abilities); Psychological impact (e.g. impact on psychological or social well-being including mood, depression, anxiety and distress); Satisfaction with intervention; Number of drop-outs; Adherence to allocated intervention; Economic outcomes; Caregiver and family quality of life	4 studies evaluated volunteer-facilitated SLT ***Functional communication*** • No difference in functional communication between volunteer-facilitated SLT and professional SLT (n=1) ***Receptive language: auditory comprehension*** • No difference in auditory comprehension (n=3) Receptive language: reading comprehension: • No evidence of difference between groups (n=1) ***Receptive language: other*** • No evidence of difference between groups (n=1) ***Expressive language: spoken*** • No evidence of difference between groups (n=2) ***Expressive language: repetition*** • Volunteer-facilitated SLT scored significantly higher on repetition vs. professionally-led SLT ***Expressive language written*** • No evidence of group differences (n=2) ***Severity of impairment*** No evidence of difference between group (n=4)

Group Therapy

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Brady et al. 2016 **United Kingdom** **Cochrane Review**	N/A	57 RCTs, which consisted of 74 randomized comparisons and involved 3002 participants, were included in the review. The included studies consisted of: 27 RCTS (1620 participants) comparing speech language therapy (SLT) to no SLT; 9 RCT (447 participants) comparing SLT to social support and stimulation; and 38 RCTs (1242 participants) compared two approaches to SLT. Time since stroke was variable and not always reported.	SLT was defined as "a formal intervention that aims to improve language communication abilities, activity and participation" Social support or stimulation included interventions that provides social support and communication stimulation but does not include targeted therapeutic interventions Comparison SLT intervention differed in duration, intensity, frequency, intervention methodology or theoretical approach.	**Primary outcome:** Measures communication activity in real world settings – Functional communication (e.g. Communicative Abilities of Daily Living, Communicative Effectiveness Index) **Secondary outcomes:** Surrogate outcome measures of communication impairment (or ability), including formal measures of receptive language (oral, written and gestural), expressive language (oral, written, and gestural) or overall level of severity of aphasia (e.g. Western Aphasia Battery, Porch Index of Communicative Abilities); Psychological impact (e.g. impact on psychological or social well-being including mood, depression, anxiety and distress); Satisfaction with intervention; Number of drop-outs; Adherence to allocated intervention; Economic outcomes; Caregiver and family quality of life	STL vs. another form of SLT: ***Functional communication:*** • Group vs. individual: SMD: 0.41 (-0.19 to 1.00) ***Severity of impairment:*** • Group SLT vs. individual: SMD: 0.15 (-0.21 to 0.50)

Training Communication Partners/Significant Others

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Simmons-Mackie et al. 2016 **USA** **Systematic Review**	N/A	56 articles, across 2 systematic reviews, evaluating the effect of communication partner training on individuals with aphasia and their communication partners: Review 1: 31 studies with 352 communication partners and 319 people with aphasia; Review 2: 25 studies with 720 communication partners and 308 people with aphasia Studies that involved training partners to provide traditional language exercises were excluded.	Intervention was defined broadly to include communication skills training as well as educational or counselling programs directed at communication partners with aphasia: Communication training focused on teaching communication partners to use strategies and resources to enhance communication; Educational program focused on increasing partner knowledge of aphasia and related issues and counselling program included those that concentrated on psychosocial consequences of aphasia	**Primary outcome:** Language impairment (standard aphasia tests) **Secondary outcomes:** Communication activity/participation (Functional use of language, conversation rating scales), Personal/psychosocial adjustment (Self-esteem, confidence) and Quality of life	<u>Language impairment</u> • Insufficient evidence of impact for either person with aphasia or the communication partner <u>Communication activity/participation</u> • Effective in communication partner • Probably effective in persons with chromic aphasia with interaction with trained communication partner. <u>Personal/psychosocial adjustment</u> • Insufficient evidence of impact for either person with aphasia or the communication partner <u>Quality of life</u> • Insufficient evidence of impact for either person with aphasia or the communication partner Communication partner training should be conducted to improve partner skills in facilitating the communication of people with chronic aphasia.

Computer-based Treatments in Aphasia

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Brady et al. 2016 **United Kingdom** **Cochrane Review**	N/A	57 RCTs, which consisted of 74 randomized comparisons and involved 3002 participants, were included in the review. The included studies consisted of: 27 RCTS (1620 participants)	SLT was defined as “a formal intervention that aims to improve language communication abilities, activity and participation” Social support or stimulation included interventions that	**Primary outcome:** Measures communication activity in real world settings – Functional communication (e.g. Communicative Abilities of Daily Living, Communicative Effectiveness Index)	<u>STL vs. another form of SLT</u>: Functional communication was significantly better in people with aphasia who received therapy at high intensity, high dose, or over a long duration compared to those that received therapy at a lower intensity, lower dose or over a shorter period ***Functional communication:***

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
		comparing speech language therapy (SLT) to no SLT; 9 RCT (447 participants) comparing SLT to social support and stimulation; and 38 RCTs (1242 participants) compared two approaches to SLT. Time since stroke was variable and not always reported.	provides social support and communication stimulation but does not include targeted therapeutic interventions Comparison SLT intervention differed in duration, intensity, frequency, intervention methodology or theoretical approach.	**Secondary outcomes:** Surrogate outcome measures of communication impairment (or ability), including formal measures of receptive language (oral, written and gestural), expressive language (oral, written, and gestural) or overall level of severity of aphasia (e.g. Western Aphasia Battery, Porch Index of Communicative Abilities); Psychological impact (e.g. impact on psychological or social well-being including mood, depression, anxiety and distress); Satisfaction with intervention; Number of drop-outs; Adherence to allocated intervention; Economic outcomes; Caregiver and family quality of life	• Computer-mediated vs. professional SLT: SMD: 0.44 (-0.10 to 0.98)

Constraint-Induced Language Therapy

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Brady et al. 2016 **United Kingdom** **Cochrane Review**	N/A	57 RCTs, which consisted of 74 randomized comparisons and involved 3002 participants, were included in the review. The included studies consisted of: 27 RCTS (1620 participants) comparing speech	SLT was defined as "a formal intervention that aims to improve language communication abilities, activity and participation" Social support or stimulation included interventions that provides social support and communication	**Primary outcome:** Measures communication activity in real world settings – Functional communication (e.g. Communicative Abilities of Daily Living, Communicative Effectiveness Index) **Secondary outcomes:** Surrogate outcome measures of communication impairment (or	STL vs. another form of SLT: ***Functional communication:*** • Constraint-induced aphasia vs. other SLT: SMD: 0.15 (-0.21 to 0.50) ***Severity of impairment:*** • Constraint-induced therapy vs. other SLT: SMD: 0.11 (-0.51 to 0.79) **Time since stroke**: Variable (and not always reported).

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
		language therapy (SLT) to no SLT; 9 RCT (447 participants) comparing SLT to social support and stimulation; and 38 RCTs (1242 participants) compared two approaches to SLT. Time since stroke was variable and not always reported.	stimulation but does not include targeted therapeutic interventions Comparison SLT intervention differed in duration, intensity, frequency, intervention methodology or theoretical approach.	ability), including formal measures of receptive language (oral, written and gestural), expressive language (oral, written, and gestural) or overall level of severity of aphasia (e.g. Western Aphasia Battery, Porch Index of Communicative Abilities); Psychological impact (e.g. impact on psychological or social well-being including mood, depression, anxiety and distress); Satisfaction with intervention; Number of drop-outs; Adherence to allocated intervention; Economic outcomes; Caregiver and family quality of life	
Zhang et al. 2017 **Meta-analysis** **China**	N/A	8 RCTs, published since 2001, evaluating the effectiveness of constraint-induced aphasia therapy in patients who have had a stroke	Comparisons were divided into 3 different groups: Constraint-Induced Aphasia Therapy (CIAT) vs. control without any components from CIAT; Constraint vs. Unconstraint and CIAT vs Social interaction in CIAT	**Primary outcome:** Severity of aphasia (e.g. Western Aphasia Battery – aphasia quotient, WAB-AQ); Language performances (e.g. Aachen aphasia test, ATT) **Secondary outcomes:** Subjective experience of language performance (e.g. Communicative activity log, CAL); Functional communication; Any activity related to language functions	<u>CIAT vs. conventional therapy (N=3 RCTs):</u> • 1 study found a significant difference in favour of CIAT in naming, expression, comprehension and token test assessed by the ATT, and CAL vs. conventional therapy • 1 study showed inconsistent results that the immediate effect and long-term effect (12-week follow-up) of CIAT was not found • 1 study found that on the ATT and the CAL, there was not statistical difference in CIAT vs. intensive conventional therapy or conventional therapy. Results were unable to be pooled in the meta-analysis. <u>Constraint vs. unconstraint (N=4 RCT):</u> There were no significant difference on ATT between CIAT and other intensive therapy program in terms of:

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
					• Name (MD: 3.97; 95% CI: -7.86 to 15.79, p=0.51) • Repetition (MD: 0.08; 95% CI: -11.88 to 12.03, p=0.99) • Token test (MD: -0.67; 95% CI: -5.62 to 4.28, p=0.79) • Written language (MD: -1.96; 95% CI: -9.08 to 5.16, p=0.59) • Comprehension (MD: -4.34, 95% CI: -12.58 to 3.91) • No significant difference on the BNT was noted between CIAT and other intensive therapy programs (MD: -3.54; 95% CI: -14.91 to 7.84, p=0.54) <u>Social interaction in CIAT (n=1)</u> Intensive language action therapy (ILAT) – which was an extended form of CIAT embedding verbal utterance in the context of communication and social interactions – was compared with the naming therapy focusing on speech production. There was a significant effect from the ILAT in ATT vs. the naming therapy.

Cognitive-Linguistic and Communicative Treatments

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Brady et al. 2016 **United Kingdom** **Cochrane Review**	N/A	57 RCTs, which consisted of 74 randomized comparisons and involved 3002 participants, were included in the review. The included studies consisted of: 27 RCTS (1620 participants) comparing speech language therapy (SLT)	Systematic searches of multiple databases were conducted to retrieve RCTs that compared SLT for aphasia after stroke to no SLT; social support of stimulation; or another SLT intervention. Hand searches of ongoing trials, reference lists and other institutions-	**Primary outcome:** Measures communication activity in real world settings – Functional communication (e.g. Communicative Abilities of Daily Living, Communicative Effectiveness Index) **Secondary outcomes:** Surrogate outcome	Only 1 RCT included in the meta-analysis evaluated cognitive-linguistic and communicative treatment. There were no significant differences between groups.

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
		to no SLT; 9 RCT (447 participants) comparing SLT to social support and stimulation; and 38 RCTs (1242 participants) compared two approaches to SLT. Time since stroke was variable and not always reported.	researchers complemented the electronic search The literature review was up-to-date as of September 2015. SLT was defined as “a formal intervention that aims to improve language communication abilities, activity and participation” Social support or stimulation included interventions that provides social support and communication stimulation but does not include targeted therapeutic interventions Comparison SLT intervention differed in duration, intensity, frequency, intervention methodology or theoretical approach.	measures of communication impairment (or ability), including formal measures of receptive language (oral, written and gestural), expressive language (oral, written, and gestural) or overall level of severity of aphasia (e.g. Western Aphasia Battery, Porch Index of Communicative Abilities); Psychological impact (e.g. impact on psychological or social well-being including mood, depression, anxiety and distress); Satisfaction with intervention; Number of drop-outs; Adherence to allocated intervention; Economic outcomes; Caregiver and family quality of life	

Abbreviations

CA = Concealed Allocation	CI = Confidence Interval
IQR = Interquartile Range	ITT = Intention to treat
MD = Mean difference	N/A = Not Assessed
OR = Odds Ratio	RCT= Randomized Controlled Trial
SLT = Speech Language Therapy	SMD = Standardized Mean Difference

Reference List

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