Question 25 evidence tables

Question 25: What is the best intensity, frequency and dose of therapy for language recovery in patients with post-stroke aphasia?

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

SLT = speech and language therapy/therapist(s)(/pathologists), PWA = people with aphasia, MICD = minimally important clinical difference, COM-B system = Capability, Opportunity, Motivation, Behaviour system, ANOVA = analysis of variance, LOT Language Orientated Treatment, IRR = Inter-rater reliability, ICCs = intraclass correlations, CLT = cognitive linguistic treatment, 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, I^2 = heterogeneity statistic.

Outcome measures: WAB-AQ = Western Aphasia Battery Aphasia Quotient, BTACT = Brief Test of Adult Cognition by Telephone, SAQOL-39 = Stroke and Aphasia Quality of Life Scale 39, GORT-4 = Gray Oral Reading Test Fourth Edition, RCBA-2 = Reading Comprehension Battery for Aphasia Second Edition; RCEQ = Reading Confidence and Emotions Questionnaire; CADL-2 = Communication Activities of Daily Living Revised, VAMS = Visual Analogue Mood Scales, ALA = Assessment of Living with Aphasia, ORLA = Oral Reading for Language in Aphasia, TIAS = Therapeutic Instrument for Speech Apraxia, MST = Module Specific Treatment, NPEA = neuropsychological exam for aphasia, CAT = constructional apraxia test, IMA = ideomotor apraxia test, AMT = attentive matrices test, FIM = Functional Independence Measure, ARSD = Aphasia Rating Scale for Depression, CCT = conventional cognitive training, ENPA = Esame Neuropsicologico Per l'Afasia", NOMS = National Outcomes Measurement System, ASHA QCL = American Speech and Language Hearing Association Quality of Communication Life Scale, TOM activity scale = therapy outcome measure activity scale, PAPT = Pyramids and Palm Trees Test, BNT = Boston Naming Test, AAT = Aachener Aphasia Test, FOQ-A = Italian Version of Functional Outcome Questionnaire for Aphasia, FAM = Functional Assessment Measure, QLQA = Quality of Life Questionnaire for Aphasics

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
3756	M. Ali et al. (2021) Predictors of poststroke aphasia recovery: A systematic review-informed individual participant data meta-analysis. Stroke. 52:5. 1778-1787.	Individual Participant Data (IPD) extracted from RCTs (for primary data) and non RCTSs (for secondary data).	Unclear	Mean absolute change in language domain score from baseline to first follow-up. Secondary outcomes: absolute and relative proportions of change in language scores from baseline. Data collected for:	1744 research studies (IPD=5928) Found early "enrolment" (= SLT intervention?) within one month post stroke associated with greatest mean absolute change in overall language ability, comprehension, naming	++ High quality study addressing very large numbers of PWA.

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				overall language ability - WAB auditory comprehension naming (Boston Naming Test) functional communication Aachen Aphasia Test AAT	and functional communication. (also participants <55 and gains for participants enrolled after 3 months - ie earlier intervention is desirable but not the only option)	
3738	M. C. Brady (2022). Dosage, Intensity, and Frequency of Language Therapy for Aphasia: A Systematic Review-Based, Individual Participant Data Network Meta-Analysis. Stroke. 29:2. 956-967.	Setting Many territories (10 different dominant languages reported). Design MA Subjects 959 individual participant data (25 trials) were included. All first-time stroke. Median age = 63; median mRS = 3; variable severity of aphasia; ethnicity = 95% white; median years of education = 11.	Variable, across main forms of language output (speech production) and auditory comprehension.	Very variable but used 'anchor' measures to recalibrate 'minority' outcomes within modality to the following standards: overall language score = Western Aphasia Battery (WAB-AQ), auditory comprehension = Aachen Aphasia Test–Token Test (AAT-TT), naming = Boston Naming Test and functional communication = Aachen Aphasia Test–Spontaneous Speech Communication (AAT-SSC) rating score This is methodologically sound.	Greatest gains in overall language and comprehension were associated with >20 to 50 hours SLT dosage	++ For dose: Greatest gains in overall language and comprehension were associated with >20 to 50 hours SLT dosage, with large effect sizes (mean change = 18 on WAB-AQ, with average effect size across other studies only 5; 5 on Aachen Aphasia Test–Token Test (MICD = 4). No functional communication gains were observed for ≤5 hours SLT or comprehension gains for ≤20 hours SLT For intensity: Greatest clinical gains were associated with frequent SLT for overall language, functional communication (3–5+ days/week), and

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						comprehension (4–5 days/week).
3785	M. C. Brady et al (2016). Speech and language therapy for aphasia following stroke. Cochrane Database of Systematic Reviews. 6: CD000425.	Cochrane Review. Update of 2012 review. Searched up to September 2015 and included a total of 57 trials. Excluded quasi-randomised trials; 3 trials from original review have been excluded and one trial from 1984 included following new information. Outcomes relating to emotional well-being of the carers has been excluded in this review. Participants: 3002 People with aphasia following stroke.	Compared studies that evaluated: 1. SLT with no SLT 2. SLT with social support or stimulation 3. SLT treatment A vs SLT treatment B SLT interventions were defined as any targeted tasks that aimed to improve language or communication.	The authors looked for a change in functional communication as the primary outcome measure. No universal tool exists to measure this. Secondary measures included formal measures of receptive and expressive language, oral, written or gestural; overall levels of severity; psychosocial impact; satisfaction with intervention, number of dropouts; compliance; economic costs.	73 comparisons analysed from 57 trials. SLT vs no SLT = 27 comparisons. In favour of SLT; functional communication (p=0.01), reading comprehension (words) ,(p=0.03), general expressive language skills (p=0.005), writing (p=0.003). SLT vs social support/stimulation = 9 trials. In favour of social support; receptive language gestural subtest (p=0.04), expressive language general (p=0.0007), written language (p=0.01) and fluency. In favour of SLT, Treated items on sentences (p=0.01), Naming (p=0.03). More participants in social support did not comply with protocol (P<0.00001) SLT A vs SLT B = 38 trials. Better outcomes with high intensity for functional	++

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					communication (p=0.003). Better outcomes with higher dosage but also higher dropout rate (p=0.03)	
3788	J. Dignam et al (2015). Intensive Versus Distributed Aphasia Therapy: A Nonrandomized, Parallel-Group, Dosage-Controlled Study. Stroke; a journal of cerebral circulation. 46: 8. 2206-2211.	Setting: Community in Australia Design: nonrandomized, parallel-group, pre–post test design. N=16 received intensive (LIFT) vs n=18 distributed therapy (D-LIFT), same overall dosage. Participants were allocated to LIFT (n=16) and D-LIFT (n=18) based on their geographic location, the availability of a position within the research program, and personal factors (eg, participant availability, transport, and accommodation). Participants: Adults with chronic aphasia resulting from unilateral, left hemisphere stroke, >4m post onset, spoke fluent English before stroke, and presented with word finding difficulties on Boston Naming Test, BNT. Those with comorbid	IFT group had 16 hours per wk for 3 wks. D-LIFT group had 6 hours per wk for 8 wks. 48 hours of aphasia therapy, manual-based and delivered by an SLT. Computer therapy was facilitated by students or assistants under SLT supervision. Therapy comprised of 14 hours of impairment therapy (Semantic Features Analysis and Phonological Components Analysis for word retrieval), 14 hours of functional therapy (tailored to individuals' communication goals and included a range of approaches, e.g., script training and communication partner training), 14 hours of computer-based therapy (StepbyStep and	Primary: Word finding based on BNT (Boston Naming Test). Secondary: functional communication (Communicative Effectiveness Index, CETI), and self-report measures of participants' communication confidence (Communication Confidence Rating Scale for Aphasia, CCRSA) and communication-related quality of life (Assessment of Living with Aphasia, ALA)	Primary outcome: both groups significantly improved on BNT post therapy and at 1-month follow up compared to pre therapy, but D-LIFT resulted in significantly greater improvements on the BNT when compared with LIFT immediately post therapy (P=0.04) and at 1-month follow-up (P=0.002). Secondary outcomes: comparable group gains on measures of participants' communicative effectiveness, communication confidence, and communication-related quality of life at post-therapy and 1-month follow-up.	+ Acceptable This study provides limited evidence for the superiority of a less intense therapy programme (6hrs per week for 8 weeks versus 16hrs per week for 3 weeks) on a naming / word retrieval outcome, both immediately post-therapy and at 1 month follow-up. No difference to functional communication and quality of life outcomes between the different intensity groups (both improved). Evidence is limited due to possible selection bias (participants were not randomized and volunteered to the study), and small sample size. Moreover, even the lower intensity in this trial of 6 hours a week may be considered intensive compared to usual care.

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		neurological conditions, severe apraxia of speech, or severe dysarthria were excluded. N=32/34 completed trial, two from D-LIFT group withdrew due to medical reasons. Their data excluded from analysis. One more did not complete 1m follow up assessment.	AphasiaScripts for word retrieval), and 6 hours of group therapy (based on Aphasia Action Success Knowledge program and included education on stroke and aphasia, compensatory strategies for effective communication, and avenues to access further support).			
3788	J. Dignam et al (2015). Intensive Versus Distributed Aphasia Therapy: A Nonrandomized, Parallel-Group, Dosage-Controlled Study. Stroke; a journal of cerebral circulation. 46: 8. 2206-2211.	Setting – Rehabilitation centres in Brisbane and Sydney, Australia between November 2012 and August 2014. Design – Phase 2 study using a non randomised, parallel group, pre-post test design. 3 intensive (LIFT) and 8 distributed (D-LIFT) trials of Aphasia (LIFT). Trials consisted of groups of 2 to 6 participants, and the results were pooled for analysis. Subjects 34 adults with chronic (>4 months time post onset), post stroke aphasia, left hemisphere stroke. Participants were allocated to LIFT (n=16) and D-LIFT (n=18) based on geographic location, the availability of a	Intensive comprehensive aphasia programme (n=16; 16 hours per week; 3 weeks; total 48 hours) versus distributed (n=18; 6 hours over week; 8 weeks; total 48 hours) therapy program. Treatment included 48 hours of impairment, functional, and group-based aphasia therapy. To evaluate the effect of the treatment intensity, the total dosage of therapy, in number of therapy hours, remained constant and the frequency and duration of intervention varied between groups. The cumulative treatment intensity for impairment therapy was measured	– The Boston Naming Test (BNT) was the primary outcome measure to assess participants' word-retrieval abilities. Secondary outcome measures included a proxy rated measure of participants' functional communication (Communication Effectiveness Index (CETI), and self reported measures of participant's communication confidence (Communication Confidence Rating Scale for Aphasia) and communication-related quality of life (Assessment of Living with Aphasia).	– Significant difference between groups at post therapy (P=0.04) and follow up (P=0.002) with naming performance being significantly higher for D-LIFT compared with LIFT). – Aphasia LIFT has a positive effect on participant's functional communication, communication confidence, and communication-related QOL regardless of treatment intensity. – No significant difference between groups on the CETI, Communication Confidence Rating Scale	+ Adequate – Potential for selection bias of sample. – Confidence intervals were not provided. – Difficult to determine which components of therapy may respond to treatment intensity.

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		position within the research program and personal factors. 32 participants completed the trial. 2 D-LIFT withdrew and 1 LIFT was unavailable for follow up testing.	according to Warren et al. framework.		or Assessment of Living with Aphasia.	
3790	L. Doppelbauer et al (2021). Long-Term Stability of Short-Term Intensive Language-Action Therapy in Chronic Aphasia: A 1-2 year Follow-Up Study. Neurorehabilitation and neural repair. 35: 10. 861-870	Setting 52 patients who had been recruited in the context of one of 3 RCTs at the Brain Language Laboratory, Freie Universitat Berlin, Germany, between January 2014 and May 2019. Design CCT but control subjects not analysed. Effectively a cohort study designed to investigating long-term stability of ILAT (intensive language–action therapy) treatment effects over circa 1–2 years Subjects: 38 PWA from three separate trials. All first-time stroke. Mean age = 59; mean time since stoke = 52 months; median mRS = 3; variable severity of aphasia, mean Token Test score = 49; median years of education = 15.	ILAT is characterized by high therapy intensity, action embedding of language use into social communicative contexts and tailoring of the therapy setting to the patients' individual needs. Language training is embedded in everyday communicative interactions as defined by therapeutic language games. These games are played in groups of 2–3 PWCA and a therapist. PWCA received at least 21 hours of ILAT within a period of 2–4 weeks.	Aachen Aphasia Test (AAT): Four subscales were conducted: token test, repetition, naming, and comprehension. An average score, calculated as the average across age-corrected standard t-cores from the 4 subscales, was taken as primary outcome measure. There were three time points: Pre- Post- 2-4 weeks Long Term Follow Up (LTFU)= 15.6 months after Post, on average	Pre-Post = significant change of 1.94 on AAT. Improvements sustained at long-term follow up. No significant drop off at follow up, so likely that gains are maintained, but no control group for this analysis. Effect Sizes hard to judge.	- Low quality Because the main question (looking for sustained effects of ILAT therapy) is not properly tested statistically (frequentist stats are used to claim 'no statistical difference between POST and LTFU'). No control group for this hypothesis (we don't know if the control subjects would have continued to improve over time or got worse). In other words, stability of language function is the assumption (perhaps not unreasonable, but still would be better with some evidence for this from matched controls, which they should have had access to).
3742	E. Godecke et al (2021). A randomized control trial of intensive aphasia	Phase III - RCT Comparing Usual Care, Usual Care -Plus	UC = standard care at each site – only included 'treatment designed to	Primary outcome: Improvement in communication using	UC group = average 2.3 hours per week (9.5 hours over 28 days)	++ High Quality

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	therapy after acute stroke: The Very Early Rehabilitation for SpEech (VERSE) study. International Journal of Stroke. 16: 5. 556-572.	and Very Early Rehabilitation for Speech VERSE. N=246 (statistically powered) Allocation 1:1:1 (Combined UC-Plus & VERSE to create 1:2 comparison between usual and high intensity intervention) Australia & NZ Acute stroke patients (within 14 days), have capacity to consent, mild to severe aphasia. Blinded outcome assessors.	restore language and communication function' UC Plus = usual care plus additional aphasia therapy sessions VERSE= error-free, verbal communication, encouraging conversation while working between 50% and 80% accuracy at each goal level to maintain a therapy challenge point. UC-Plus & VERSE consisted of 20 sessions of 45-60 mins therapy for 4 weeks (15-20 hours total or 4-5 hrs per week)	WAB-R-AQ – maximum potential recovery (%MPR) at 12 weeks. 5 point change is a conservative clinically meaningful effect Secondary outcomes- Naming, QOL, depression	High intensity = average 5 hours a week (22.7 hours over 28 days) UC – 52.9% MPR HI= 50.3% MPR No significant difference. Similarly with secondary outcomes – no significant differences.	Well designed and executed study. Conclusions are that >3 sessions of SLT therapy per week are superfluous in acute post stroke aphasia.
3763	J. R. Griffin-Musick et al (2021). Cognitive-linguistic outcomes from an intensive comprehensive aphasia program implemented by graduate student clinicians. Aphasiology.	Non-controlled retrospective case series over several years of an ICAP programme. Delivered by students Range of months post stroke, ages and several had repeated the ICAP programme. N=53 Non-blinded	ICAP – 3-4.5 hours per day 3-4 days per week 3-5 weeks. Individual &group therapy, community outings, partner education, technology use	Western Aphasia Battery, Naming, problem solving, discourse.	Statistically significant improvements in WAB, naming and problem solving.	**0** Unacceptable - reject Unable to use SIGN checklist No small N or N=1 study design methodology i.e. multiple baseline measures using participants as own control. Not RCT, blinded Possibly not representative of population.
3770	S. Harvey et al (2020). Dose effects in behavioural treatment of post-stroke aphasia: a	Systematic review and meta analysis Continuation of 2021 study but included only studies which compared different			Authors identify some trends in the data but report that findings are not sufficiently	High quality study but lack of clear answers to research questions. Useful paper for setting out future research needs.

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	systematic review and meta-analysis. Disability and rehabilitation. 01-Dec.	amount of same intervention. Questions: p4 Does a larger dose of intervention result in better language and communication outcomes for people with aphasia following stoke? [sic] Does time post stroke impact dose effects? Are there specific person-level characteristics that help explain variability in dose–response relationships? Is there evidence of dose effects in specific language or communication interventions? n=16 studies			categorical to answer their research questions	
3745	S. R. Harvey et al (2021). Treatment dose in post-stroke aphasia: A systematic scoping review. Neuropsychological rehabilitation. 31: 10. 1629-1660.	Systematic scoping review "... to map the evidence regarding treatment dose in post-stroke aphasia and to explore how dose is con-ceptualized, measured and reported in the aphasia intervention literature."p7 Two questions: (1) In the post-stroke aphasia literature, how is treatment	Wide range	Wide range	(1) Concept of dose conceptualised, measured and reported with extreme variability., Authors suggest Baker's 2012 concept of dose is applicable to post stroke aphasia but unclear whether dose has impact on effect of treatment.	Clear research question included and inclusion criteria identified. Exclusion criteria clear from PRISMA flow chart. One person selected papers, but 20% double screened at full text phase by second person.

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		dose conceptualized, measured and reported? (2) Is there sufficient evidence in the post-stroke aphasia treatment literature to determine the effect of differing doses on treatment outcomes? n=112 studies Overall 2,128 pts - median 8 per study but wide variation inc single case studies - RCTs and some repetition of participants across studies.			(2) Not yet, but authors suggest areas for further research e.g., maximum dose in different settings.	Data extracted by one author. Second author reviewed quality of 10% of included studies but did not extract data. Authors don't state that they searched for reports regardless of publication status. Excluded studies not listed [but how would this be realistic since n=>3,000?] Included studies were all peer reviewed but not specifically scientifically assessed in the paper. Useful definition of dose suggested given lack of consensus in the literature "measuring the amount of aphasia intervention in hours is inadequate because of the inherent assumption that all hours of therapy are equal."
3783	H. Hayashi et al (2017). The Influence of Speech-Language-Hearing Therapy Duration on the Degree of Improvement	Setting: Japan. Register. Stroke patients drawn from Japan Association of Rehabilitation Database	Not specified, just amount of therapy (SLT, OT and PT) expressed as binary variable (<23 versus ≥23hours for SLT, <56 versus ≥56 hours for	Functional Independence Measure (FIM) comprehension FIM expression FIM memory	Improvement in FIM comprehension was significantly associated with higher amount of SLT (p=0.005) and OT (p=0.034). In subgroup	+ Acceptable These findings cannot be directly generalised to people with aphasia as the

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	in Poststroke Language Impairment. Rehabilitation Research and Practice. 7459483.	Design: Cohort/ outcomes study from register data. Odds ratios (ORs) with 95% CIs are given, based on improved vs stable/ not improved language scores (comprehension, expression and memory) and amount of therapy. ORs are reported overall and per age group and dementia level. Subjects: 3,551 stroke patients. Age: 66%> 65 years old, 20% 55-64, 14%<55. Sex: 58% male. Stroke: 51% had cerebral infarct Paralysis side: 34% R, 31% L, 35% unknown. How many participants had aphasia not reported. Rather, dementia levels based on Japanese standardised scale are provided.	OT, and <58 versus ≥58 hours for PT.		analyses the effect was significant for higher amount of SLT for younger patients (<64 yo) and for those with severe dementia; and for higher OT for those between 55-64 yo. Improvement in FIM expression was associated with higher amount of SLT (p=0.051), but not with higher amount of OT or PT. In subgroup analyses the effect was significant for higher amount of SLT for younger patients (<64 yo). In subgroup analyses the effect was significant for higher amount of OT for those <55 yo, and for PT for those >/=75 yo and for those with mild to moderate dementia. Improvement in FIM memory was associated with higher amount of OT (p=0.036), but not with higher amount of SLT or PT. In subgroup analyses the effect was significant for higher amount of SLT for	population under study was stroke and it is not specified if people had aphasia or not.

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					younger patients (<55 years) and for those with severe dementia. In subgroup analyses the effect was significant for higher amount of OT for those 55-64 years and for those with severe dementia.	
3752	R. S. Husak et al (2021). A systematic review of aphasia therapy provided in the early period of post-stroke recovery. Aphasiology.	Setting Many territories (10 different dominant languages reported). Design SR Subjects 1,947 participants were represented across 23 studies (mostly RCTs) from January 1, 1960, to April 30, 2021 were included.	Variable, across main forms of language output (speech production) and auditory comprehension.	Very variable. Timings also variable from a couple of days post stroke to several (~4) months. Median around 1-month post-stroke.	Aim was to answer three Qs: 1: (9 studies) Do individuals who begin aphasia therapy within four months of aphasia onset demonstrate more gains on language and/or communication outcome measures than individuals who do not receive aphasia treatment within four months of onset? Half of studies show a treatment effect, the other half no difference between control and treatment groups. 2: (11 studies) Is one type of aphasia treatment more efficacious than another type of aphasia treatment for improving	+ For treatment in acute phase: 50% of studies show an effect, but effect sizes not clear. For different types of therapy: No evidence that any one approach is better than another. For intensity: No evidence that high is better than low or vice-versa.

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					outcomes on language and/or communica tion measures when therapy is initiated within 4 months of aphasia onset? All 11 = Equivalent. 3: (6 studies) Is there a difference on language and/or communication outcome measures between individuals who receive lower and higher weekly intensive treatments when is aphasia therapy initiated within 4 months of aphasia onset? Five studies found no difference between low and high intensity treatments, one favoured low.	
3787	E. Koyuncu et al (2016). Speech and language therapy for aphasia following subacute stroke. Neural Regeneration Research. 11: 10. 1591-1594	Ankara, Turkey Inpatient rehab unit n = 33 "subacute stroke" (not defined) Male:female - 22:11 Severity not clearly described but: mild - 2 Mod - 10 Severe 21	16 sessions of 30-60 minutes provided by SLT over 8 weeks (i.e. twice a week), tailored to patient severity and goals - impairment based therapy only.	Gülhane Aphasia Test (GAT-2) Covers standard areas: Fluency of speech Listening comprehension Reading comprehension Oral-motor evaluation Automatic speech Repetition Naming	On GAT-2, statistically significant improvements for moderate and severe patients.	No control group small sample one location intervention not really described and not grounded in any theoretical model. Paper appears written by MD not SLT

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		Unclear whether patients had previous acute SLT input.				
3753	A. P. Leff et al (2021). Clinical Effectiveness of the Queen Square Intensive Comprehensive Aphasia Service for Patients with Poststroke Aphasia. Stroke. E594-E598.	Setting: Community, UK

Design: Before – After therapy study + follow-up (baseline, 3-week, 12-week)

2-way repeated ANOVA analysis for language scores (4 language scores and 3 time points). Related t-test for functional communication which was measured at baseline and 12-week follow up.

Participants: 46 people with chronic aphasia post stroke. Age: median (IQR) = 51 (45-60)
Sex: 32 male
Stroke: (L)MCA infarct 38, (R)MCA infarct 1, (L) haemorrhage 7.
Time post stroke: median (IQR) = 29 (18-53) months. | Intensive Comprehensive Aphasia High intensity SLT across ICF domains (impairment, activity and participation) targeting both language impairment and functional communication, comprising both individual and group therapy and including educational support. Intensity, frequency and duration: 7 hours per day, 5 days per week, for 3 weeks. TIDieR provided in supplement. | Comprehensive Aphasia Test (CAT) spoken picture description, CAT written picture description, CAT auditory comprehension, and CAT written comprehension. Also, functional communication as rated by a carer/relative/friend on the Communicative Effectiveness Index (CETI).

Mood and quality of life outcomes also collected for people with aphasia and their carers but not reported in this paper. | Results reported for 36/46 participants due to missing data on some CAT scores and not all participants having a carer to score the CETI.

Language scores: Significant language scores by time interaction F $(2.9,100.3)=12.7$, $P< 0.0005$. Post-hoc comparisons demonstrated that the domain-by-time interaction was driven more by speaking that the other language scores (though all $p<0.0005$). The interaction effect remained significant when age, sex and time post stroke were entered in repeated measures ANCOVA.

Planned sub-analyses of each CAT language score also showed significant | +
Acceptable

10/46 participants' data (22%) are not included in the analyses.

The study has limitations: the sample size is small (n=46), data are analysed for 36/46 (22% not included in analysis); there is no information on compliance/adherence with intervention; confidence intervals are not reported; and there is no control group.

Despite these limitations there is reasonable confidence that the outcomes are due to the intervention as participants are in the chronic stage post stroke (spontaneous recovery unlikely); and there was an interaction effect of language score by time, with speaking which arguably is the domain |

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					improvements over time: Speaking $F_{(2,70)}=36.3$, $P<0.0005$, $d=1.3$; Writing $F_{(2,70)}=16.9$, $P=0.001$, $d=0.8$ Auditory comprehension $F_{(1.5,52.6)}=10.2$, $P=0.001$; $d=0.6$ and Reading comprehension $F_{(1.7,58.2)}=17.4$, $P=0.002$, $d=0.5$ Functional communication: CETI scores were significantly higher at 12-week follow up than baseline $t_{(35)}=5.4$, $P<0.0005$, $d=0.9$.	worked on more improving more than other language scores.
3753	A. P. Leff et al (2021). Clinical Effectiveness of the Queen Square Intensive Comprehensive Aphasia Service for Patients with Poststroke Aphasia. Stroke. E594-E598.	Non randomised or controlled N=47 PWA post stroke. No details on severity of stroke Median 29 months post stroke.	Cohorts of 3-4 people with aphasia PWA – 7 hours, 5 days per week, 3 weeks. Consisted of group and individual therapy; target impairment, activity and participation levels of language and communication functioning; include education support for	Comprehensive Aphasia Test – 4 domains at 3 & 12 weeks. Communicative Effectiveness Index (CETI) at 12 weeks.	Improvements across the board.	**0** Unacceptable - reject Unable to use SIGN checklist No small N or N=1 study design methodology i.e. multiple baseline measures using participants as own control. Not RCT, blinded Possibly not representative of population.

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			the individual and for families			
3755	M. Menahemi-Falkov et al (2021). A systematic review of maintenance following intensive therapy programs in chronic post-stroke aphasia: importance of individual response analysis. Disability and rehabilitation. Jan-16.	Setting: Community Design: Systematic review of studies on immediate outcomes and maintenance of outcomes after intensive therapy programmes for people with chronic aphasia. 44 studies included (n=670). Unable to use group level meta-analyses techniques due to lack of overlap in OMIs. Instead, individual participant data (IPD) was used and meta-synthesis performed using standard Error of Measurement (SEm) and Minimal Detectable Change (MDC90) Participants: People with chronic aphasia (>6m post onset) n=393 IPD from group studies and n=49 from SCED.	Intensive SLT programmes for aphasia, including Constraint Induced therapy (e.g., CILT, CIAT, CIAT-Plus, CILT-II), Promoting Aphasics' Communication Effectiveness (PACE), Multi-Modality Aphasia Treatment (M-MAT), Model-Orientated Aphasia Therapy (MOAT), Phonomotor therapy, Naming treatments, Intensive Comprehensive Aphasia Programmes (ICAPs), Action Observation intervention, Semantic Feature Analysis (SFA), Script training. Dose (total hours): range 10-100, mean (SD) = 45.17 (24.3) Intensity (hpw): range 5-25, mean (SD) = 11.91 (5.3) Duration (wks): range 2-16, mean (SD) = 4.15 (2.9)	Language outcomes: Western Aphasia Battery-Aphasia Quotient (WAB-AQ) Boston Naming Test (BNT) Aachen Aphasia Test profile score (AAT) Activity and participation outcomes: Amsterdam –Nijmegen Everyday Language Test A-scale (ANELT A) and the Communicative Effectiveness Index (CETI) For health-related quality of life, the Stroke and Aphasia Quality of Life Scale-39g (SAQOL-39g)	This review showed that although most included studies reported statistically significant improvement after intensive SLT(>5 hrs per week) and at follow-up, analysis of individual participant data showed that a proportion of participants demonstrated gains >MCD90 on outcome measures ('immediate responders': 43.64% on impairment-based measures, 31.46% on activity/participation and 31.17% on. QoL outcomes. Of immediate responders 70.42% maintained gains at follow up evaluation on impairment based measures, 68.8% on activity/participation and 53.3% on. QoL outcomes.	++ High

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			Follow-up (wks): range 1-32, mean (SD) = 11.6 (7.7)			
3755	M. Menahemi-Falkov et al (2021). A systematic review of maintenance following intensive therapy programs in chronic post-stroke aphasia: importance of individual response analysis. Disability and rehabilitation. Jan-16.	Setting Many territories. Design SR Subjects 670 participants were represented across 44 studies (50% with experimental designs [non-experimental = case-series or single subject pre-post = SCED]) up to December 2020.	Variable, The 44 studies applied 20 distinct therapy types. Medians: Dosage (total hours) = 40 Intensity (hours per week) = 11 Therapy duration (weeks) = 3.5 Follow-up duration (weeks) = 12	Very variable. All 44 studies included impairment-based outcome measures. Out of the 24 experimental studies, at pre, post and follow-up assessment points, 10 used the BNT, seven applied the WAB-AQ, and two used the AAT profile. For activity/ participation outcomes, six studies used the CETI and two the ANELT A-scale; one study used the SAQOL-39g to assess health-related QoL. MDC90 cut-off values were used to classify response types.	Analysis of the IPD revealed that the pre to post intervention change score was below the SEm cut-off score for 42.41% of all participants in group-studies. The picture was even worse when the more appropriate MDC90 cut-off score was applied: Two thirds scored below the MDC90 score from pre- to post-intervention across all outcome measures, and about a third of the immediate therapy responders (one third of total IPD) lost maintenance at follow-up. Thus, approximately 22% (one third times two thirds) of all participants in the group studies maintained their initial improvement when the MDC90 was applied as cut-off score.	++ Methodologically strong study. Problem is that there was so much variability in dose and timings of interventions.
3764	L. Monetta et al (2021). Intensive and non-intensive treatment of	Single case series N=6	Intensive (4 sessions per week for 3 weeks) vs non-intensive (1 session	Untrained picture naming - between 20 – 50 items	Authors conclude that there were no differences between	0 Unacceptable – reject

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	lexical anomia are equally efficient in post-stroke aphasia. Neurocase. 27: 1. 76-85.	Chronic (>17 months) post stroke anomia (lexical impairment) ABA design – different for each participant Multiple baselines, repeated baselines (3x pre treatment),	per week for 12 weeks conditions made up the A & B for the design with 4 weeks break between conditions Therapy – naming (or repetition if failed spontaneously)	dependent on baseline measures. Naming from description	intensive vs non intensive therapy – both led to gains in all 6 participants.	No checklist for small N or N=1 studies. Using N=1 literature – some of the methods employed demonstrate good quality i.e. alternating intensity others low quality i.e. analysis. Results are a little difficult to follow – unclear which participants had which design. Only consider impairment
3749	M. Nicholas et al (2021). Outcomes of an interprofessional intensive comprehensive aphasia program's first five years. Topics in Stroke Rehabilitation.	Retrospective review of ICAP programme Annual cohorts 7-8 PWA N=35 (39 completed the ICAP but only 35 results) 90% >6 months post stroke Diverse ages, ethnicities, and severities Independent with personal care (or carer), own transport	5 weeks 4 days per week 8 hours a day – with breaks Individual, group (OT & SLT), Wellness, sports, music therapy, social lunch.	Impairment - Western Aphasia Battery Assessment of Language Related Functional Activities (ALFA) Communicative effectiveness index (CETI) Cognitive Linguistic Quick Test (non-verbal subscales) (CLQT) Participation i.e. Activity Card Sort (ACS) Emotional support – many measures Personal level factors – many measures	Significant improvements in WAB (except reading). CETI, most of ALFA Not CLQT Improvements in Participation, emotional support and personal level factors.	Unacceptable - reject. Unable to use SIGN checklist No small N or N=1 study design methodology i.e. multiple baseline measures using participants as own control. Not RCT, blinded Possibly not representative of population.
3780	F. Nouwens et al (2017). E fficacy of early cognitive-linguistic treatment for aphasia due to stroke: A randomised controlled	Netherlands prospective multicentre - 14 stroke units RCT open label treatment (?) blinded evaluation of the primary	Two groups: 1 - intensive CLT (one hour per day over 4 weeks 2 no language therapy (usual care in	Primary outcome measure ANELT A-score 'under-standability' (range: 10–50, higher scores equal better performance), measuring the adequacy of verbal	4 weeks of early intensive CLT did not result in better everyday verbal communi-cation than no early language treatment.	Randomisation and blinding all clearly described. BUT Some patients in control group received treatment, not all patients in the intervention group

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	trial (Rotterdam Aphasia Therapy Study-3). European Stroke Journal. 2: 2. 126-136. Q: "...early intensive CLT for 4 weeks more effective than no language treatment in the first 4 to 6 weeks after stroke, and whether this approach generates a long-lasting benefit." n = 152 Intervention n =80 Control n = 72 All participants gave informed consent Randomised within 2 weeks of stroke onset stratified by mild-mod-severe aphasia and centre.	outcome measure (PROBE-design). Netherlands = SLT starts 3-6 weeks post stroke) NB: "Minimal counselling was allowed, aimed at preventing communication problems and included elaborate infor-mation about aphasia and providing communication advice. Concise diagnostics for therapy goal setting was allowed also." (p128) Both groups received therapy after 4 weeks. Intervention group: BOX for semantics FIKS for phonology	communication, 4 weeks after randomisation. Detailed linguistic Ax at 4 weeks, 3 months and 6 months post randomisation. Communication: ANELT for everyday func-tional verbal communication, semi-standardised interview from the Aachen Aphasia Test (AAT) rated with the reliable and valid ordered categorical six-point ASRS, the ScreeLing, the Token Test a Boston Naming Test. Semantic Association Test (SAT), verbal version; Comprehensive Aphasia Test (CAT), word comprehension, Category Fluency PALPA: Nonword repetition and Auditory Lexical Decision Letter Fluency . Also: EQ-5D-3L modified Rankin Scale (mRS) Barthel Index	Comparison of intention to treat analysis and on treatment analysis(ie in Group 1 those who received 28 hours therapy over 4 weeks - 29% of Group 1 sample and Group 2 those who received no treatment): Group 1 achieved significantly better ANELT-A, CAT auditory comprehension and SAT scores than Group 2 after four weeks. No sig differences between the groups on all other measures.	received the amount of treatment anticipated. ITT analysis used - but note point below about this. Overall good quality study according to SIGN checklist. In the control-group, 10 participants refused deferred treatment and received regular SLT. The trial-coordinator did not interfere with treatment, and details on the content of SLT provided to these patients were not recorded. - suggests results skewed by participants having treatment against the protocol. Also note differences between intention to treat vs on treatment results which suggests that treatment did have an effect on language. So although the authors conclude that early intensive treatment is ineffective, this was not

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
						actually the case for all participants.
3760	S. Roberts et al (2021). Better long-term speech outcomes in stroke survivors who received early clinical speech and language therapy: What's driving recovery? Neuropsychological rehabilitation. Jan-23.	Multi centre (PLORAS database, 70 centres) n= 143 All 4-5 years post stroke Mean age at stroke 58-61 Self-report of severity and whether had therapy or not: Moderate n=15 no therapy/ n=20 therapy Severe n=49 no therapy/n=59 therapy Excluded medically unwell patients mild aphasia impairment Aim - to explore speaking outcomes	Intervention was routine care, i.e. whatever pts received in their centre and not within the control of the study which asked for self-report of therapy. Analysis controlled for: initial severity, left and right hemi-sphere lesion size and site, age at stroke, therapy received between the intervention period and the follow-up time point, other neuropsychological impairments	PROMS retrospective rating of speaking ability at: 1 week 1 month 1 year post stroke, categorised as Mild, Moderate, Severe. Carers could provide info in case of memory difficulties. CAT completed in full for all participants (timing of this unclear)	Improved speaking outcomes for participants who reported early therapy - when controlled for factors like initial severity (excluded Mildly impaired pts), age (pts in study were of very limited age range).	Participants self report whether they had therapy or not and how much- query over reliability of this) Authors acknowledge the difficulties inherent in retrospective reports "Naming ability was better in those who did, versus did not receive early clinical therapy."p19 - unclear what this means. Interesting study but my own experience of self reporting in PWA is that it is not necessarily reliable. Very interesting discussion by authors with useful ideas for further research.
3771	V. M. Shklovskij et al (2019). Regression of Poststroke Aphasia and Concomitant Nonspeech Syndromes Due to Courses of Restorative Therapy Including Intensive Speech Therapy.	Non randomised controlled trial N=18 Ischaemic stroke	15 x 35min SLT sessions per week for 4 weeks (60 in total) No details as to what therapy included.	Higher mental functions - HMF assessment Quantitative Speech Assessment in Aphasia QSAA fMRI	Unclear	**0** Unacceptable - reject Unable to use SIGN checklist No small N or N=1 study design methodology i.e. multiple baseline measures using participants as own control. Not RCT, blinded

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	Neuroscience and Behavioral Physiology. 49: 9. 1184-1194.					Possibly not representative of population.
3750	T. Simic et al (2021). The effects of intensity on a phonological treatment for anomia in post-stroke aphasia. Journal of Communication Disorders. 93. 106125.	Setting 16 PWA with prominent anomia from single-centre in Toronto Design RCT, dose controlled to look at two different intensities of Phonological Components Analysis (a word retrieval technique). . Subjects mean age = 53; median time since stoke = 2 years; mean WAB-AQ = 62 (moderate severity); median years of education = 15.	Dose controlled PCA: Standard treatment ST = 15 trials per session, 1 session a day, 3 days a week for 10 weeks. Cumulative treatment intensity (dose x frequency x duration) = 450. Intense treatment IT = 15 trials per session, 3 session a day, 4 days a week for 2.5 weeks. Cumulative treatment intensity (dose x frequency x duration) = 450	The primary outcome measure was naming accuracy on the treated and untreated word sets, assessed pre-treatment, post-treatment (i.e., within seven days of the last therapy session), and at four- and eight-week follow-ups. Secondary = American Speech-Language-Hearing Association Quality of Communication Life scale	Main effect of treatment on trained items over all three post Rx time points. No main effect or interaction with group (ST vs. IT). Or Group by Time. Quality of life scale = no significant effects for time or group.	++ High quality Well designed and controlled study.
3750	T. Simic et al (2021). The effects of intensity on a phonological treatment for anomia in post-stroke aphasia. Journal of Communication Disorders. 93. 106125.	Randomised trial comparing 2 intensities of intervention. People with chronic post stroke anomia N=16 Mean 4 years post stroke Mean age 52 (younger than average stroke population) naming accuracy more impaired in SI group.	Phonological Components Analysis (PCA) High intensity - increased frequency over shorter duration 2.5 weeks (450 trials) Standard intensity – 10 weeks (450 trials) Each trial – picture presented, and participants asked to name and give 5 phonological components – rhyme,	Naming – treatment and non-treatment sets of words -individualised to participants. QOL – ASHA QLC	Naming accuracy improved significantly more for the treated compared to untreated words from pre to post treatment. No increased naming accuracy between SI and HI groups.	+ Acceptable Likely underpowered therefore not conclusive. Not representative of population (younger).

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			first sound, another word with first letter, final sound and number of syllables. Feedback given. Named again.			
3773	B. Stahl et al (2018). Efficacy of intensive aphasia therapy in patients with chronic stroke: A randomised controlled trial. Journal of Neurology, Neurosurgery and Psychiatry. 89: 6. 586-592.	Germany Outpatient unit, Berlin Randomised, blinded at assessment n=30 participants with chronic aphasia > 1 year post stroke Age: mean 60.1 years(SD 15.3 years) Time since onset: mean 65.2 months (SD 64.3 months) ie over 5 years. male;female - no info severity - no info Randomly assigned to two groups: 1 Highly intensive = 4 hours daily 2 Moderately intensive = 2 hours daily	Intensive Action Language Therapy intervention clearly described: small group activities Very clearly described materials Theoretically based 2 weeks baseline waiting period + 2 weeks Group 1 or 2 + 2 weeks Group 1 or 2	1 Aachen Aphasia Test 2 Action Communication Test Measures taken at four points - 2 weeks before treatment onset (T0), at treatment onset (T1), after the first training interval (T2) and after the second training interval (T3)	All participants completed therapy blocks AAT scores - significant difference between baseline and post therapy but no difference between the two groups Mean ACT scores seem to show that Group 2 (moderately intensive) participants continued to improve after the second fortnight whereas Group 1(highly intensive) dipped after the second fortnight. Benefit to moderately intensive practice rather than highly intensive? Moderately intensive practice over 4 weeks rather than two weeks had best outcomes.	Overall, good study No information about the participant experience or any other functional outcomes. This would have been useful for thinking about implementation. Patients would need to attend daily for two weeks to participate in small group work - acceptability/feasibility unclear Based on outcomes, pts would need to commit to two hours daily over 2-4 weeks. Can services provide this?

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
3766	J. L. Wambaugh et al (2020). Further Study of the Effects of Treatment Intensity on Outcomes of Sound Production Treatment for Acquired Apraxia of Speech: Does Dose Frequency Matter? American journal of speech-language pathology. 29: 1 263-285.	Building on previous findings 2018, where less intense, distributed practice resulted in better outcomes. Single case experimental design for each pt. Multiple baseline design n=12 men: women 8:4 time since onset <1 year - 13.5 years Age range 43 - 81	All participants received 3 weeks of multiple baseline testing, then either intensive (SPT-I) or non-intensive (SPT-T). SPT-T = 27 sessions over 9 weeks vs. SPT-I = 27 sessions over 3 weeks ie both types involved 27 hours of therapy. Then a 2 week break with further testing, followed by 2 weeks of the alternative intensive or non-intensive version of SPT. Follow up testing for maintenance at 2 and 8 weeks after each type of treatment. Stimuli were 45 items designed for each participant.	Repetition of single words based on individuals' treatment stimuli. Criteria for articulatory accuracy provided.	All participants showed gains after intensive and non intensive intervention. No effect of dose frequency seen.	Very small sample, with a very wide range of ages, time since onset. Useful exploratory data.
3779	R. Wenke et al (2018). Communication and well-being outcomes of a hybrid service delivery model of intensive impairment-based treatment for aphasia in the hospital setting: a pilot study.	Setting: Hospital outpatients, Australia Design: pilot study, matched pairs Per protocol analysis	Group 1 was Hybrid 4 and had 4 hours of therapy per week comprising on 2 hours individual therapy, 1 hour group therapy and 1 hour computer therapy.	Impairment based: Comprehensive Aphasia Test (CAT) and Boston Naming Test (BNT). Activity, participation and well-being: Disability Questionnaire of the CAT,	Within group analyses performed. No statistically significant changes post-treatment or at FU compared to pre-treatment in either group. Trends in the right direction.	N/A. Small pilot study

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	Disability and rehabilitation. 40: 13. 1532-1541.	Participants: 9 of 14 completed treatment and included in analysis. People with aphasia in setting who were >18 and proficient in English pre-morbidly. In group 1 (4 h per week) n=5; mean age =75.7 years, Median months post-onset =9. In group 2 (8h per week) (n=4; mean age =68.25 years, median months post-onset=6.5	Group 2 was Hybrid 8 and had 8 hours of therapy per week comprising on 4 hours individual therapy, 2 hour group therapy and 2 hour computer therapy. (detail of therapy content provided in paper)	the Stroke Aphasia Depression Questionnaire (SADQ) and the Communication Effectiveness Index (CETI)	They also combined the two groups (n=9): sig changes post-therapy and at FU for naming and aphasia severity. Significant changes post-therapy only for spoken picture description, the BNT, SADQ and the Disability Questionnaire.	
3779	R. Wenke et al (2018). Communication and well-being outcomes of a hybrid service delivery model of intensive impairment-based treatment for aphasia in the hospital setting: a pilot study. Disability and rehabilitation. 40: 13. 1532-1541.	PWA Australia Not global aphasia N=14 Mean 6 or 9 months post onset – huge range.	Comparing 2 doses of therapy Hybrid 4 – 4 hours a week for 8 weeks Hybrid 8 – 8 hours a week for 8 weeks Therapy included individual, group and computer therapy Individualised impairment based therapy with 5-10 mins of functional therapy in groups.	Assessments CAT BNT SADQ CETI	No significant within group changes in Hybrid 4 or 8 pre-post intervention although when pooled some significant changes were seen across most measures.	**+** Acceptable Authors conclude that intensive therapy improves aphasia, but due to lack of control group this cannot be stated. They acknowledge that there is not enough evidence to say 8 hours is superior to 4 hours per week. Design is acceptable but there are several areas of that reduce quality – unclear concealment, and reduced number of participants.
3974	E. L. Hoover et al (2017). Communication and quality of life outcomes	Setting 27 PWA with prominent anomia from single-centre in Boston	30 h of interprofessional treatment	Participants were tested at four intervals:	Significant improvements across all outcome measures (pre-	**++** High quality

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
	from an interprofessional intensive, comprehensive, aphasia program (ICAP). Top Stroke Rehabil. 24: 2. 82-90.	Design CCT A delayed treatment, within-participant research protocol was used Subjects Mean age = 56; mean time since stoke = 4.9 years; mixed secerity; median years of education = 16.	a week for a four-week period. High intensity: six hours of interdisciplinary treatment a day, five days per week, over a four-week interval. Treatment was individualized using current evidence-based approaches and was administered by second-year, MS-SLP graduate students at Boston University under 100% faculty supervision. 30 hr breakdown: 15.5 h speech-language instruction (9.5-h group, 3 hours dyadic, and 3 hours individual), five hours group occupational therapy treatment, four and-a-half hours group physical therapy treatment, and five hours group nutrition treatment	one-month pre-treatment (baseline), immediate pre-treatment, immediate post treatment, and three-month post treatment (follow-up) on seven language measures. As series of individualised, mostly impairment-based outcome measures were selected for each individual and averaged as the outcome measured called 'targetted'.	post) with large effect sizes for: ●Targeted ●Philadelphia naming test ●Northwestern verb production battery ●Production of Affixed Words ●FAS word fluency test ●Discourse comprehension test	Well designed and controlled study. Within-subject (waitlist controlled) but this is standard for these types of intervention.
3974	E. L. Hoover et al (2017). Communication and quality of life outcomes from an interprofessional	Non controlled. Delated treatment, within participant protocol N=27 Chronic aphasia (>6 months)	6 hours of interdisciplinary treatment 5 days per week over 4 weeks	Several language measures including Verbal narrative, oral repetition, naming, etc.	Statistically significant improvements across the board.	**0** Unacceptable - reject No checklist for small N or N=1 studies.

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	intensive, comprehensive, aphasia program (ICAP). Top Stroke Rehabil. 24: 2. 82-90.	Able to consent Mean age 56 Mean years post onset approximately 5	15.5 hrs SLT (9.5 group, 3 dyadic, 3 individual) 5 hrs OT 4.5 hrs PT 5 hours nutrition Individualised based on goals. Also included care giver training.	ASHA Functional assessment of communication skills Stroke Impact Scale Different measures were used for different participants dependent on goals – raw scores converted to percentages for comparison.		Using N=1 literature – some of the methods employed demonstrate good quality i.e. blinding others low quality i.e. analysis & number of baseline measures. Results are a little difficult to follow
3976	M. C. Brady et al (2022). Precision rehabilitation for aphasia by patient age, sex, aphasia severity, and time since stroke? A prespecified, systematic review-based, individual participant data, network, subgroup meta-analysis. International Journal of Stroke.	Setting – UK, RCT IPD from the RELEASE database. Design – Individual participant data (IPD) meta-analyses - a one stage, random effects network meta-analysis approach that filtered IPD into a single optimal model examining SLT regimen and language recovery from baseline to post intervention follow up, adjusting for covariates identified a-priori. Data were dichotomised by age (≤/> 65 years), aphasia severity (mild-moderate/moderate-severe based on language outcomes median value), chronicity (≤/>3 months) and sex subgroups. Subjects – 959 IPD (25 RCTS) informed a pre specified IPD subgroup network analysis of therapy regime and treatment outcomes	– demography (including sex, age and language used), stroke (time post onset, hemisphere, and aphasia severity), SLT intervention and language outcome (overall-language ability, auditory comprehension, and functional communication). – Language recovery was defined as the change in absolute language score from baseline to first post-intervention follow up. – SLT interventions targeting language recovery were categorised by regimen (frequency, intensity and dosage). – Network meta-analysis of SLT	– Overall language ability (Western Aphasia Battery-Aphasia Quotient (AQ 482) IPD; 11 RCTS) – Functional Communication (Aachen Aphasia Test Token Test – Spontaneous Speech Communication (AAT-SSC) 533 IPD; 14 RCTs) Auditory comprehension (Aachen Aphasia Test - Token Test (AAT-TT) 550 IPD; 16 RCTs).	– Overall the greatest language gains from baseline to first follow up occurred amongst working-age, female, moderate-severe aphasia severity sub groups, and those within 3 months of stroke onset. – For working age participants, greatest language gains occurred alongside moderate-to-high intensity SLT (functional communication 3-to-4 hours/week; overall-language and comprehension < 9 hours/week); older participations' greatest gains occurred alongside low-intensity SLT (≤2 hours/week) except for auditory comprehension	+/++ Adequate /High Quality - Uses pre specified sub-group network meta-analyses of the RELEASE database. Unsure if the scientific quality of the studies was assessed/reported in previous publications/elsewhere.

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
		Participants experienced predominantly left hemisphere (683 IPD; 97.7%); ischaemic first strokes (685 IPD; 88.9%) with English predominant across languages represented (255 IPD 26.6%).	interventions delivered by language outcomes – Datasets were used as random effects. Demographics and interventions as fixed effects. Effect sizes were estimated and reported (95% CI). – One stage network meta-analysis examined IPD and SLT intervention regimen variations by age, time-since-onset, aphasia severity at baseline and sex sub groups, and associated estimates of mean language gains from baseline.		(> 9 hours/week). For both age-groups, SLT frequency and dosage associated with best language gains were similar. – Participants ≤3 months post-onset demonstrated greatest overall-language gains for SLT at low-intensity/moderate-dosage (≤2 SLT-hours/week; 20-to-50 hours); for those >3months post stroke greatest gains were associated with moderate-intensity/high dosage SLT (3-4 SLT-hours/week; ≥50 hours). – For moderate-severe participants, 4 SLT-days/week conferred the greatest language gains across outcomes, with auditory comprehension gains only observed for ≥4 SLT days/week; mild-moderate participants' greatest functional communication gains were associated with similar frequency (≥ 4 SLT-days/week), and	

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					greatest overall language gains with higher frequency SLT (≥ 6 days/weekly). – Males greatest gains were associated with SLT of moderate (functional communication; 3-to-4 hours/weekly) or high intensity (overall language comprehension; (> 9 hours/weekly) compared to females for whom the greatest gains were associated with lower-intensity SLT (< 2 SLT-hours/weekly). Consistencies across subgroups were also evident; greatest overall gains were associated with 20-50 SLT hours in total; auditory comprehension gains were generally observed when SLT >9 hours over ≥ 4 days a week.	
3976	M. C. Brady et al (2022). Precision rehabilitation for aphasia by patient age, sex, aphasia severity, and time since stroke? A prespecified, systematic review-based,	Network meta-analysis of individual participant data (IPD) RELEASE database	Varied as per original included studies	Demographic data (age, sex, language) Stroke (time post-onset, hemisphere, and aphasia severity)	Age - see below Sex - see below Language - predominantly English 255 IPD; 26.6%;	Part of RELEASE IPD database - difficult to apply SIGN checklist e,g, inclusion/exclusion criteria reported elsewhere.

REF ID	Source	Setting, design & subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
	individual participant data, network, subgroup meta-analysis. International Journal of Stroke.	"explored patterns of interaction between SLT frequency, intensity, and dosage and aphasia language outcomes by age, sex, aphasia chronicity and severity subgroups."p9		SLT intervention Language outcome (overall-language ability, auditory comprehension, and functional communication). Language recovery =change in score from baseline to first follow up. [which must vary between studies]	Time post onset Hemisphere - left hemisphere (683 IPD; 97.7%) Ischaemic first stroke - (685 IPD; 88.9%) Aphasia severity IPD subgroup network meta-analysis of: therapy regimen and language outcomes - 959 IPD (25 RCTs) overall-language ability (WAB-AQ 482 IPD; 11 RCTs); functional communication (AAT-SSC 533 IPD; 14 RCTs) auditory comprehension (AAT-TT 550 IPD; 16 RCTs). Age and language rehab: Varied results across age groups for different regimes of frequency intensity and dose. Early vs late rehab:	Important study but methodology beyond scope of reviewer experience. Age and sex related findings are interesting, but it would be difficult to apply these in clinical practice as age and sex cannot determine therapy provision. Authors note that methodology carries risk of false negative and positive results and conclude that clinical trials are now needed. This suggests that this study is informative rather than definitive.

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					5 days/ week effective for both early and late input (after 3 months which is not very late) Late rehab needed higher dose to achieve effect. Aphasia severity Frequency: higher frequency more effective for mild-mod impairment. Dose: mod-severe pts need higher dose >50 hours SLT. Sex and language rehab For men, better outcomes associated with higher frequency and intensity than women, but dose needs similar.	