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ESO EUROPEAN STROKE ORGANISATION

Aphasia Rehabilitation Guideline

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Guideline Working Group

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Background

- Aphasia affects 1/4 of stroke survivors in the long-term
- Compared to other stroke, people with aphasia experience worse outcomes
  - Functional
  - Psychosocial
  - Pain
  - Economic
- Population-based study of people living in long-term care facilities in Canada (n=66,193): aphasia had the largest negative impact on QoL followed by cancer and Alzheimer's Disease (Lam and Wodchis, 2010)
- Effective intervention for aphasia is a clinical research priority

Evidence so far…

Cochrane Review (Brady et al., 2016)

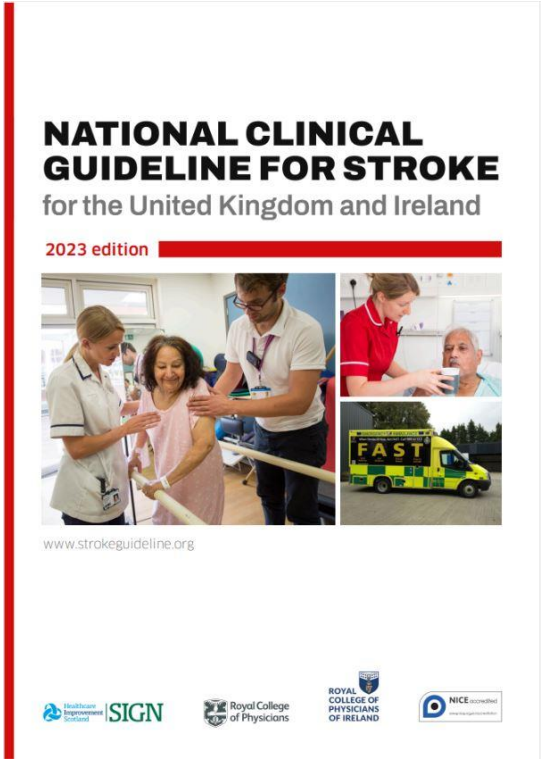
- 27 RCTs, n=1620
- Speech and Language Therapy is effective / leads to better outcomes

IPD Network Meta-analysis (RELEASE, 2022)

- 174 datasets from 28 countries, n=5928
- The greatest gains in language, on average, were seen among people who had SLT 3 - 5 days per week, for 2 to 4 hours each week
- Improvements were greatest when 20–50 hours of therapy were delivered
- People in the long-term post stroke (> 3 months) needed more therapy.

Aphasia in long-term stroke

- People with aphasia after stroke should be given the opportunity to improve their language and communication abilities as frequently and for as long as they continue to make meaningful gains



And yet… variability in practice

- Systematic Literature Review of SLT practice:
- 25 studies from 19 countries
- 16 studies reported usual care, and total dose 8/16 </= 10 hours

Bhagwat et al (under submission) Speech and language therapy (SLT) usual care for people with aphasia after stroke: a systematic review.

Survey of SLT practice - 620 respondents from 48 countries

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Overall SLT Regime Internationally			
SLT Regime	Median (IQR)	Min	Max
Intensity (Number of hours/week)	3 (3)	0	19
Dosage (Total number of hours)	25 (40)	0	200
Duration (Total number of weeks)	13 (25)	0	191
Frequency (Number of days/week)	3 (3)	0	5

Bhagwat, Ali, Dipper & Brady (under submission) Speech and language therapy (SLT) usual care for people with aphasia after stroke: a cross sectional survey

Uncertainties remain

- Confirmatory study designs to establish optimal
  - Dose (total number of therapy hours)
  - Intensity (hours per week)
  - Frequency (number of therapy days per week) of
- SLT delivery approaches
  - Group therapy vs one to one?
  - Digital vs in-person?
  - Tailored?
  - Use of brain stimulation

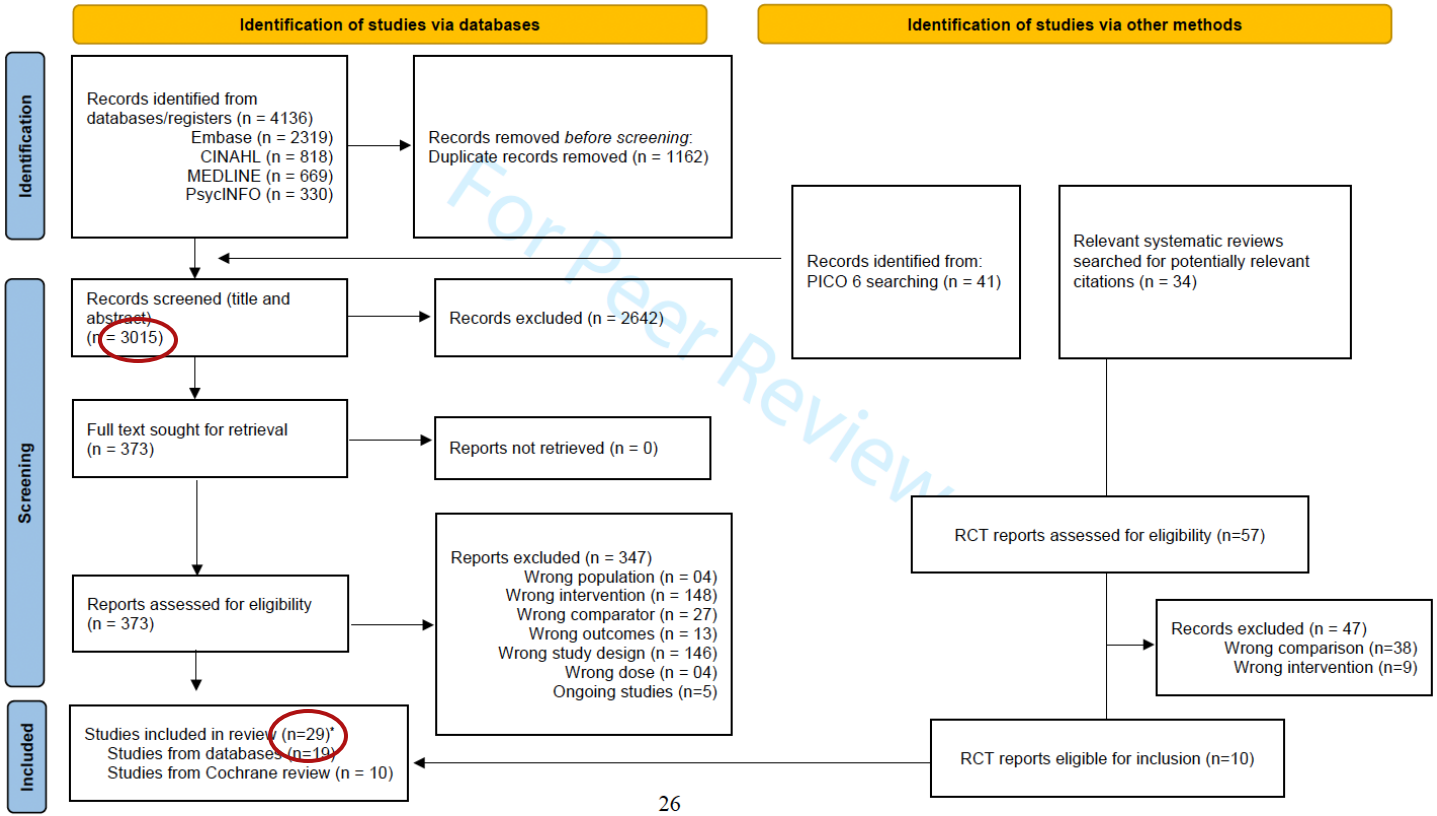
Development of ESO Aphasia Rehabilitation

Addressed 10 PICOs

Methods

- Followed ESO Standard Operating Procedures (Steiner et al., 2021) and GRADE framework (Guyatt et al., 2011).
- Outcomes rated as critical according to GRADE and Delphi approach were included:
  - Overall language ability
  - Functional Communication
  - Expressive language (and/or naming)
  - Auditory Comprehension
  - Communicative confidence
  - Well-being
  - Quality of Life
  - Side effects and adverse effects for tDCS brain stimulation
- Measured post-intervention and at follow-up

Results - PRISMA flowchart for PICOs 1-5, 7



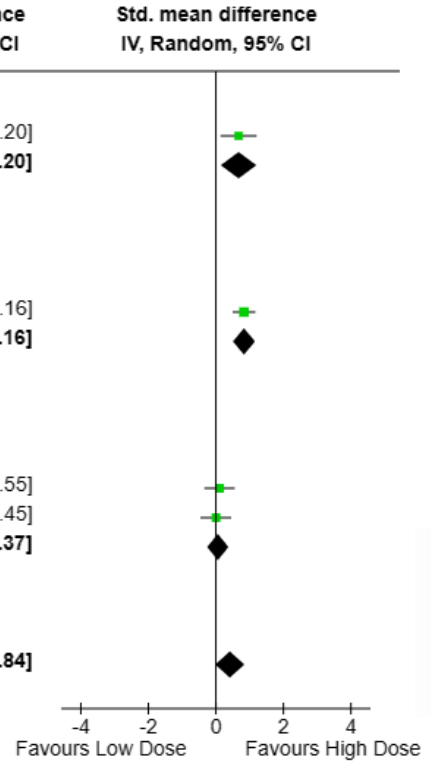
*In some cases individual studies were informed by multiple reports

PICO 1: dose

In people with aphasia after stroke is a higher dose of SLT (≥ 20 hours) compared to a lower dose of SLT (< 20 hours) associated with greater improvements in language, communication, or quality of life?

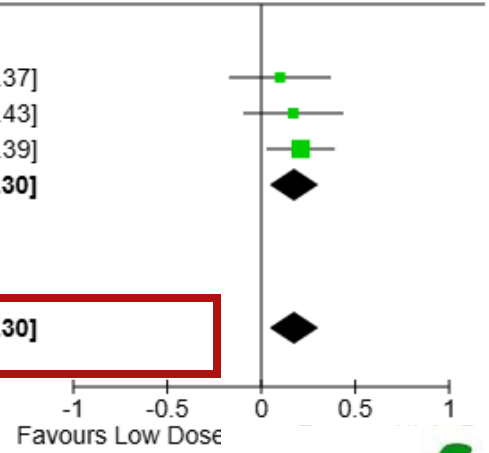
PICO 1: In people with aphasia after stroke is a higher dose of SLT associated with greater improvements in communication?

Study or Subgroup	High Dose SLT Mean	SD	Total	Low Dose SLT Mean	SD	Total	Weight	Std. mean difference IV, Random, 95% CI
30.7.1 Functional Communication Profile								
VERSE I	50.231	27.3032	32	32.119	25.7642	27	22.3%	0.67 [0.14 , 1.20]
Subtotal (95% CI)			**32**			**27**	**22.3%**	**0.67 [0.14 , 1.20]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.50 (P = 0.01)								
30.7.2 ANELT-A								
FCET2EC 2017	28.79	10.9	78	19.6	11.1	78	28.2%	0.83 [0.50 , 1.16]
Subtotal (95% CI)			**78**			**78**	**28.2%**	**0.83 [0.50 , 1.16]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 4.98 (P < 0.00001)								
30.7.3 Communication Effectiveness Index								
COMPARE 2022 CIAT Plus	59.17	18.29	66	57.21	17.49	28	24.8%	0.11 [-0.33 , 0.55]
COMPARE 2022 M-MAT	57.28	17.7	66	57.21	17.49	27	24.7%	0.00 [-0.44 , 0.45]
Subtotal (95% CI)			**132**			**55**	**49.5%**	**0.06 [-0.26 , 0.37]**
Heterogeneity: Tau² = 0.00; Chi² = 0.10, df = 1 (P = 0.75); I² = 0%								
Test for overall effect: Z = 0.35 (P = 0.73)								
Total (95% CI)			**242**			**160**	**100.0%**	**0.41 [-0.02 , 0.84]**
Heterogeneity: Tau² = 0.14; Chi² = 11.98, df = 3 (P = 0.007); I² = 75%								
Test for overall effect: Z = 1.88 (P = 0.06)								
Test for subgroup differences: Chi² = 11.87, df = 2 (P = 0.003), I² = 83.2%								



PICO 1: In people with aphasia after stroke is a higher dose of SLT (≥ 20 hours) associated with greater improvements in quality of life?

Study or Subgroup	High Dose SLT Mean	SD	Total	Low Dose SLT Mean	SD	Total	Weight	Mean difference IV, Random, 95% CI
30.8.1 SAQoL								
COMPARE 2022 CIAT Plus	3.76	0.65	69	3.66	0.61	30	23.8%	0.10 [-0.17 , 0.37]
COMPARE 2022 M-MAT	3.83	0.64	69	3.66	0.61	31	24.5%	0.17 [-0.09 , 0.43]
FCET2EC 2017	3.9	0.54	78	3.69	0.61	78	51.7%	0.21 [0.03 , 0.39]
Subtotal			**216**			**139**	**100.0%**	**0.17 [0.04 , 0.30]**
Test for overall effect: Z = 2.62 (P = 0.009)								
Heterogeneity: Tau² = 0.00; Chi² = 0.45, df = 2 (P = 0.80); I² = 0%								
Total			**216**			**139**	**100.0%**	**0.17 [0.04 , 0.30]**
Test for overall effect: Z = 2.62 (P = 0.009)								
Test for subgroup differences: Not applicable								
Heterogeneity: Tau² = 0.00; Chi² = 0.45, df = 2 (P = 0.80); I² = 0%								

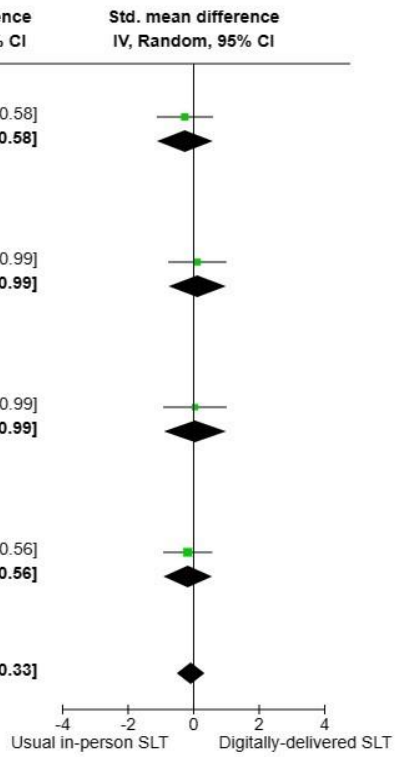


PICO 4a: digitally delivered SLT

In people with aphasia after stroke is digitally delivered SLT (using telerehab, virtual reality therapist or similar) compared to usual in-person SLT associated with similar improvements in language, communication, or quality of life?

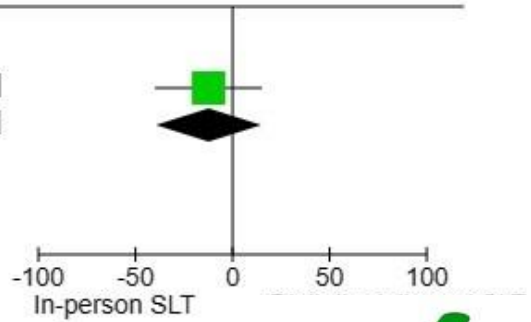
PICO 4a: In people with aphasia after stroke is digitally delivered SLT compared to usual in-person SLT associated with similar improvements in communication?

Study or Subgroup	Digitally-delivered SLT Mean	SD	Total	In-person SLT Mean	SD	Total	Weight	Std. mean difference IV, Random, 95% CI
36.1.1 Functional Outcome Questionnaire- Aphasia (FOQ)								
Spaccavento 2021	102.16	51.22	13	115.25	38.51	9	24.5%	-0.27 [-1.12 , 0.58]
Subtotal (95% CI)			**13**			**9**	**24.5%**	**-0.27 [-1.12 , 0.58]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.62 (P = 0.53)								
36.1.2 CADL								
Zhou 2018	35.9	21.8	10	33.4	21.7	10	23.3%	0.11 [-0.77 , 0.99]
Subtotal (95% CI)			**10**			**10**	**23.3%**	**0.11 [-0.77 , 0.99]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.25 (P = 0.81)								
36.1.3 Communication Activity Log								
Grechuta 2019	50	7.01	9	49.41	19.32	8	19.7%	0.04 [-0.91 , 0.99]
Subtotal (95% CI)			**9**			**8**	**19.7%**	**0.04 [-0.91 , 0.99]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.08 (P = 0.94)								
36.1.4 WAB Spontaneous Speech								
Meltzer 2017	11.6	6.2	14	12.6	4.4	14	32.5%	-0.18 [-0.92 , 0.56]
Subtotal (95% CI)			**14**			**14**	**32.5%**	**-0.18 [-0.92 , 0.56]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.48 (P = 0.63)								
Total (95% CI)			**46**			**41**	**100.0%**	**-0.09 [-0.51 , 0.33]**
Heterogeneity: Tau² = 0.00; Chi² = 0.50, df = 3 (P = 0.92); I² = 0%								
Test for overall effect: Z = 0.42 (P = 0.67)								
Test for subgroup differences: Chi² = 0.50, df = 3 (P = 0.92), I² = 0%								



PICO 4a: In people with aphasia after stroke is digitally delivered SLT compared to usual in-person SLT associated with similar improvements in quality of life?

Study or Subgroup	Digitally-delivered SLT Mean	SD	Total	In-person SLT Mean	SD	Total	Weight	Mean difference IV, Random, 95% CI
35.6.1 Quality of Life Questionnarie for Aphasics (Total Score)								
Spaccavento 2021	59.66	40.49	13	72	24.45	9	100.0%	-12.34 [-39.54 , 14.86]
Subtotal (95% CI)			**13**			**9**	**100.0%**	**-12.34 [-39.54 , 14.86]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.89 (P = 0.37)								

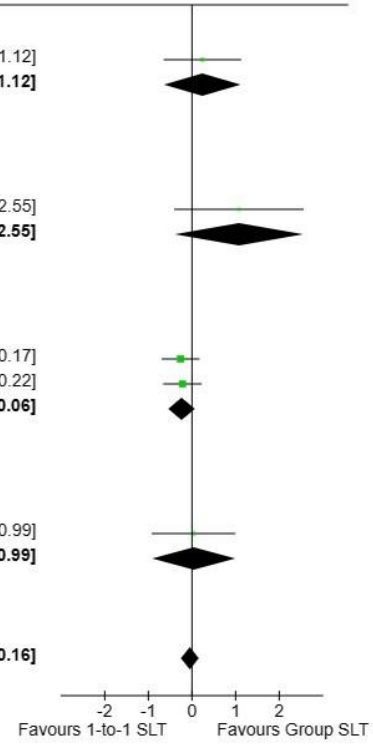


PICO 5a: group therapy

In people with aphasia after stroke is group SLT compared to one-to-one SLT associated with similar improvements in language, communication or QoL?

PICO 5a: In people with aphasia after stroke is group SLT compared to one-to-one SLT associated with similar improvements in communication?

Study or Subgroup	Group SLT Mean	SD	Total	1-to-1 SLT Mean	SD	Total	Weight	Std. mean difference IV, Random, 95% CI
39.1.1 Pragmatic Protocol								
Wertz 1981	93.6	5.2	10	92.2	6.1	10	5.4%	0.24 [-0.64 , 1.12]
Subtotal (95% CI)			**10**			**10**	**5.4%**	**0.24 [-0.64 , 1.12]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.53 (P = 0.60)								
39.1.2 ANELT								
Wilssens 2015	43.4	3.6	5	37.8	5.7	4	1.9%	1.08 [-0.40 , 2.55]
Subtotal (95% CI)			**5**			**4**	**1.9%**	**1.08 [-0.40 , 2.55]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.43 (P = 0.15)								
39.1.3 Scenario test								
COMPARE 2022 CIAT Plus	45.25	11.11	66	47.95	8.01	31	22.9%	-0.26 [-0.69 , 0.17]
COMPARE 2022 M-MAT	46.12	8.52	66	47.95	8.01	30	22.5%	-0.22 [-0.65 , 0.22]
Subtotal (95% CI)			**132**			**61**	**45.4%**	**-0.24 [-0.54 , 0.06]**
Heterogeneity: Tau² = 0.00; Chi² = 0.02, df = 1 (P = 0.89); I² = 0%								
Test for overall effect: Z = 1.54 (P = 0.12)								
39.1.4 Communication Activity Log								
Grechuta 2019	50	7.01	9	49.41	19.32	8	4.6%	0.04 [-0.91 , 0.99]
Subtotal (95% CI)			**9**			**8**	**4.6%**	**0.04 [-0.91 , 0.99]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.08 (P = 0.94)								
Total (95% CI)			**288**			**138**	**100.0%**	**-0.05 [-0.25 , 0.16]**
Heterogeneity: Tau² = 0.00; Chi² = 4.75, df = 6 (P = 0.58); I² = 0%								
Test for overall effect: Z = 0.47 (P = 0.64)								
Test for subgroup differences: Chi² = 4.62, df = 4 (P = 0.33), I² = 13.5%								



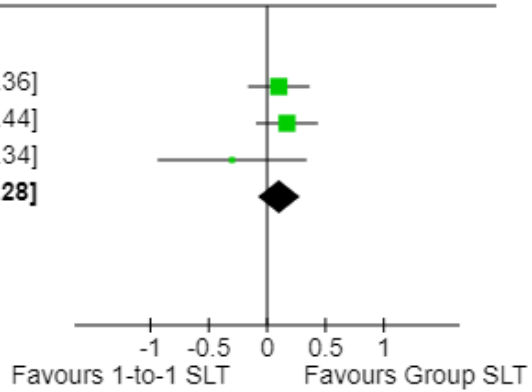
PICO 5a: In people with aphasia after stroke is group SLT compared to one-to-one SLT associated with similar improvements in quality of life?

Study or Subgroup	Group SLT Mean	Group SLT SD	Group SLT Total	1-to-1 SLT Mean	1-to-1 SLT SD	1-to-1 SLT Total	Weight	Mean difference IV, Random, 95% CI
40.7.1 SAQoL								
COMPARE 2022 CIAT Plus	3.76	0.65	69	3.66	0.61	31	46.3%	0.10 [-0.16 , 0.36]
COMPARE 2022 M-MAT	3.83	0.64	69	3.66	0.61	30	45.8%	0.17 [-0.10 , 0.44]
VERSE II	3.6	0.6	8	3.9	0.7	8	7.9%	-0.30 [-0.94 , 0.34]
Subtotal (95% CI)			**146**			**69**	**100.0%**	**0.10 [-0.08 , 0.28]**

Heterogeneity: Tau² = 0.00; Chi² = 1.77, df = 2 (P = 0.41); I² = 0%

Test for overall effect: Z = 1.10 (P = 0.27)

Test for subgroup differences: Not applicable



Summary

- Current high quality guidelines (Australia, Canada, UK and USA) recommend "early, frequent, intensive treatment, as tolerated"[1]
- The ESO Aphasia Rehabilitation Guideline recommendations:
  - add specificity and guidance on overall dose and regime
  - inform long-term care

[1]Burton, B., Isaacs, M., Brogan, E., Shrubsole, K., Kilkenny, M. F., Power, E., ... & Wallace, S. J. (2023). An updated systematic review of stroke clinical practice guidelines to inform aphasia management. *International Journal of Stroke*, *18*(9), 1029-1039.

Summary

- There is merit in higher dose (>20 hrs), intensity (>3hrs/wk), frequency (>4 days/wk) and tailored SLT approaches.

- Alternative models of delivery (digital, groups) can be beneficial to augment traditional SLT dosage in resource constrained contexts.

- Full details including recommendations

- Thank you

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