STARS Education and Research Alliance

CREATING KNOWLEDGE | TRANSFORMING CARE

The University Of Queensland
AUSTRALIA

Metro North Health | Queensland Government

STARS Critically Appraised Topic (CAT) Group: Dysphagia in Lateral Medullary Stroke (LMS)

Specific Question:

In post-acute settings, what is the best evidence for the management of dysphagia in LMS by speech pathologists?

Clinical bottom line

Why is this important?

Dysphagia is often more severe and potentially on-going. Treatment is more challenging.

Inclusion Criteria

Adults
In hospital setting
Patients who have dysphagia as a result of Lateral Medullary Stroke
Speech pathology management
English language
Relevant study types (Meta-analysis, systematic review, RCT)

Search

2011-2021

Type of Study

Intervention

PICOT

	Description	Search terms
Population and Setting	Dysphagia as a result of Lateral Medullary Stroke in adults In hospital	Swallow* Aphagia Deglutition Lateral Medullary Syndrome Wallenberg's Syndrome Lateral Medullary Infact Lateral Medullary Haemorrag* Medullar
Intervention or Exposure (ie what is being tested)	Speech pathology management	Speech therap* Speech language patholog* Speech and language pathology* Speech and language therap* Therapy Intervention Treatment Management Exercises Manoeuvre Rehabilitation Assessment Diagnosis Evaluation

CAT Lead: Emily Dalmau. Email: Emily.dalmau@health.qld.gov.au
Date CAT completed: 21/9/2022; To be reviewed 21/9/2023

Comparison, if any	Usual care +/- other forms of speech pathology management (Any comparison group)	
Outcomes of interest	Return to oral intake	Saliva management PROM – Quality of life Feeding tube removal Recovery from dysphagia
Types of studies	Meta-analyses, systematic reviews, randomised controlled trials	

Databases Searched

PubMed, CINAHL complete, Embase, Cochrane Library

Date of search

1 October 2021

Search Strategies (including subject headings)

PubMed 114 results
("Deglutition Disorders"[Mesh] OR “dysphagia”[tiab] OR “dysphagias”[tiab] OR “deglutition disorder”[tiab] OR “deglutition disorders”[tiab] OR “swallowing disorder”[tiab] OR “swallowing disorders”[tiab] OR “aphagia”[tiab] OR “aphagias”[tiab]) AND (("Lateral Medullary Syndrome"[Mesh] OR “lateral medullary syndrome”[tiab] OR “lateral medullary syndromes”[tiab] OR “lateral medullary stroke”[tiab] OR “lateral medullary strokes”[tiab] OR “lateral medullary infarction”[tiab] OR “lateral medullary infarctions”[tiab] OR "lateral medullary infarct"[tiab] OR "lateral medullary infarcts"[tiab] OR “wallenbergs syndrome”[tiab] OR “wallenberg s syndrome”[tiab] OR “wallenberg syndrome”[tiab] OR “Posterior Inferior Cerebellar Artery Syndrome”[tiab] OR “Dorsolateral Medullary Syndrome”[tiab] OR “Lateral Bulbar Syndrome”[tiab] OR "Brain Stem Infarctions"[Mesh] OR “brainstem stroke”[tiab] OR “brainstem strokes”[tiab] OR “brain stem stroke”[tiab] OR “brain stem strokes”[tiab] OR “brainstem infarction”[tiab] OR “brainstem infarctions”[tiab] OR “brain stem infarction”[tiab] OR “brain stem infarctions”[tiab] OR “brainstem infarct”[tiab] OR “brainstem infarcts”[tiab] OR “brain stem infarct”[tiab] OR “brain stem infarcts”[tiab]) OR (("Stroke"[Mesh] OR “infarction”[tiab] OR “infarctions”[tiab] OR “stroke”[tiab] OR “strokes”[tiab] OR “infarct”[tiab] OR “infarcts”[tiab] OR “haemorrhage”[tiab] OR “hemorrhage”[tiab] OR “haemorrhages”[tiab] OR “hemorrhages”[tiab] OR “haemorrhagic”[tiab] OR “hemorrhagic”[tiab]) AND ("Medulla Oblongata"[Mesh] OR “medulla oblongata”[tiab] OR “medullary”[tiab] OR “medulla”[tiab]))) AND 2011:2021[dp] AND (english[Filter] OR undetermined[Filter])

CINAHL Complete (EBSCOhost) 37 results
Limited to English language
(MH "Deglutition Disorders" OR TI(“dysphagia” OR “dysphagias” OR “deglutition disorder” OR “deglutition disorders” OR “swallowing disorder” OR “swallowing disorders” OR “aphagia” OR “aphagias”) OR AB(“dysphagia” OR “dysphagias” OR “deglutition disorder” OR “deglutition disorders” OR “swallowing disorder” OR “swallowing disorders” OR “aphagia” OR “aphagias”)) AND ((TI(“lateral medullary syndrome” OR “lateral medullary syndromes” OR “lateral medullary stroke” OR “lateral medullary strokes” OR “lateral medullary infarction” OR “lateral medullary infarctions” OR "lateral medullary infarct" OR "lateral medullary infarcts" OR “wallenbergs syndrome” OR “wallenberg s syndrome” OR “wallenberg syndrome” OR “Posterior Inferior Cerebellar Artery Syndrome” OR “Dorsolateral Medullary Syndrome” OR “Lateral Bulbar Syndrome” OR “brainstem stroke” OR “brainstem strokes” OR “brain stem stroke” OR “brain stem strokes” OR “brainstem infarction” OR “brainstem infarctions” OR “brain stem infarction” OR “brain stem infarctions” OR “brainstem infarct” OR “brainstem infarcts” OR “brain stem infarct” OR “brain stem infarcts”) OR AB(“lateral medullary syndrome” OR “lateral medullary syndromes” OR “lateral medullary stroke” OR “lateral medullary strokes” OR “lateral medullary infarction” OR “lateral medullary infarctions” OR "lateral medullary infarct" OR "lateral medullary infarcts" OR “wallenbergs syndrome” OR “wallenberg s syndrome” OR “wallenberg syndrome” OR “Posterior Inferior Cerebellar Artery Syndrome” OR “Dorsolateral Medullary Syndrome” OR “Lateral Bulbar Syndrome” OR “brainstem stroke” OR “brainstem strokes” OR “brain stem stroke” OR “brain stem strokes” OR “brainstem infarction” OR “brainstem infarctions” OR “brain stem infarction” OR “brain stem infarctions” OR “brainstem infarct” OR “brainstem infarcts” OR “brain stem infarct” OR “brain stem infarcts”)) OR ((MH "Stroke+" OR TI(“infarction” OR “infarctions” OR “stroke” OR “strokes” OR “infarct” OR “infarcts” OR “haemorrhage” OR “hemorrhage” OR “haemorrhages” OR “hemorrhages” OR “haemorrhagic” OR “hemorrhagic”) OR AB(“infarction” OR “infarctions” OR “stroke” OR “strokes”

OR “infarct” OR “infarcts” OR “haemorrhage” OR “hemorrhage” OR “haemorrhages” OR “hemorrhages” OR “haemorrhagic” OR “hemorrhagic”)) AND (TI(“medulla oblongata” OR “medullary” OR “medulla”) OR AB(“medulla oblongata” OR “medullary” OR “medulla”)))) AND PY 2011-2021

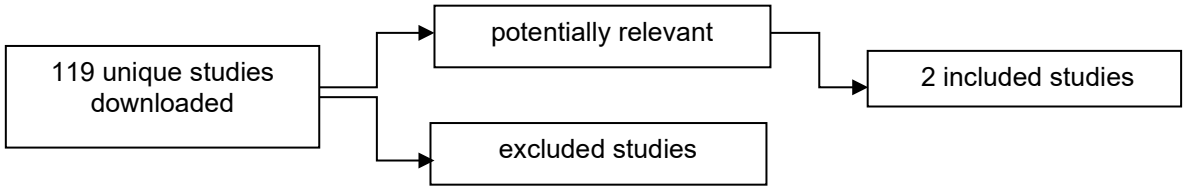
Embase (Elsevier) 107 results
('dysphagia'/mj OR “dysphagia”:ti,ab OR “dysphagias”:ti,ab OR “deglutition disorder”:ti,ab OR “deglutition disorders”:ti,ab OR “swallowing disorder”:ti,ab OR “swallowing disorders”:ti,ab OR “aphagia”:ti,ab OR “aphagias”:ti,ab) AND (('Wallenberg syndrome'/exp OR “lateral medullary syndrome”:ti,ab OR “lateral medullary syndromes”:ti,ab OR “lateral medullary stroke”:ti,ab OR “lateral medullary strokes”:ti,ab OR “lateral medullary infarction”:ti,ab OR “lateral medullary infarctions”:ti,ab OR "lateral medullary infarct":ti,ab OR "lateral medullary infarcts":ti,ab OR “wallenbergs syndrome”:ti,ab OR “wallenberg s syndrome”:ti,ab OR “wallenberg syndrome”:ti,ab OR “Posterior Inferior Cerebellar Artery Syndrome”:ti,ab OR “Dorsolateral Medullary Syndrome”:ti,ab OR “Lateral Bulbar Syndrome”:ti,ab OR 'brain stem infarction'/exp OR “brainstem stroke”:ti,ab OR “brainstem strokes”:ti,ab OR “brain stem stroke”:ti,ab OR “brain stem strokes”:ti,ab OR “brainstem infarction”:ti,ab OR “brainstem infarctions”:ti,ab OR “brain stem infarction”:ti,ab OR “brain stem infarctions”:ti,ab OR “brainstem infarct”:ti,ab OR “brainstem infarcts”:ti,ab OR “brain stem infarct”:ti,ab OR “brain stem infarcts”:ti,ab) OR (('cerebrovascular accident'/exp OR “infarction”:ti,ab OR “infarctions”:ti,ab OR “stroke”:ti,ab OR “strokes”:ti,ab OR “infarct”:ti,ab OR “infarcts”:ti,ab OR “haemorrhage”:ti,ab OR “hemorrhage”:ti,ab OR “haemorrhages”:ti,ab OR “hemorrhages”:ti,ab OR “haemorrhagic”:ti,ab OR “hemorrhagic”:ti,ab) AND ('medulla oblongata'/exp OR “medulla oblongata”:ti,ab OR “medullary”:ti,ab OR “medulla”:ti,ab))) AND ([article]/lim OR [article in press]/lim OR [review]/lim) AND [2011-2021]/py AND [english]/lim

Cochrane Library (Wiley) 15 results (Trials)

ID	Search	Hits
#1	MeSH descriptor: [Deglutition Disorders] explode all trees	3005
#2	(“dysphagia” OR “dysphagias” OR “deglutition disorder” OR “deglutition disorders” OR “swallowing disorder” OR “swallowing disorders” OR “aphagia” OR “aphagias”):ti,ab,kw	4798
#3	#1 OR #2	6744
#4	MeSH descriptor: [Lateral Medullary Syndrome] explode all trees	6
#5	MeSH descriptor: [Brain Stem Infarctions] explode all trees	19
#6	(“lateral medullary syndrome” OR “lateral medullary syndromes” OR “lateral medullary stroke” OR “lateral medullary strokes” OR “lateral medullary infarction” OR “lateral medullary infarctions” OR "lateral medullary infarct" OR "lateral medullary infarcts" OR “wallenbergs syndrome” OR “wallenberg s syndrome” OR “wallenberg syndrome” OR “Posterior Inferior Cerebellar Artery Syndrome” OR “Dorsolateral Medullary Syndrome” OR “Lateral Bulbar Syndrome” OR “brainstem stroke” OR “brainstem strokes” OR “brain stem stroke” OR “brain stem strokes” OR “brainstem infarction” OR “brainstem infarctions” OR “brain stem infarction” OR “brain stem infarctions” OR “brainstem infarct” OR “brainstem infarcts” OR “brain stem infarct” OR “brain stem infarcts”):ti,ab,kw	86
#7	#4 OR #5 OR #6	86
#8	MeSH descriptor: [Stroke] explode all trees	10671
#9	(“infarction” OR “infarctions” OR “stroke” OR “strokes” OR “infarct” OR “infarcts” OR “haemorrhage” OR “hemorrhage” OR “haemorrhages” OR “hemorrhages” OR “haemorrhagic” OR “hemorrhagic”):ti,ab,kw	115966
#10	#8 OR #9	115969
#11	MeSH descriptor: [Medulla Oblongata] explode all trees	28
#12	(“medulla oblongata” OR “medullary” OR “medulla”):ti,ab,kw	784
#13	#11 OR #12	801
#14	#10 AND #13	65
#15	#7 OR #14	137
#16	#3 AND #15 with Cochrane Library publication date Between Jan 2011 and Dec 2021	15

Search process
Exported results from databases to EndNote, removed duplicates, also removed, trial registrations, conference abstracts, editorials, commentaries, and results not relevant to inclusion criteria. Copied annotated bibliography for search results into word for screening title and abstracts, and highlighted results with relevant study types.

Results



CAT Lead: Emily Dalmau. Email: Emily.dalmau@health.qld.gov.au
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First Author, year and type of study	Population and setting	Intervention or exposure tested	Study results	Assessment of quality and comments
Zhang et al., 2016 3 arm RCT (n=82)	Stroke (LMS) survivors with dysphagia	3 arms: 1. Traditional dysphagia therapy 2. Sensory approach (electrical stimulation) + traditional 3. Motor approach + traditional	All groups showed improved swallowing function. Sensory + traditional showed significantly greater improvement than other groups, Motor + traditional showed greater improvement than traditional alone.	Significant confounding effect of a lack of objective, instrumental assessment of swallow. Unable to quantify effects on sensory group without instrumental assessment.
Mao et al., 2021	n=40 stroke survivors with LMS, hospital setting	1. Traditional dysphagia therapy 2. tDCS + traditional	Patients in the intervention group achieved improved swallowing outcomes (i.e. tDCS + traditional), when compared to traditional therapy alone.	Application of this research to clinical practice is limited due to differences in the traditional therapy treatment protocol and outcome measures described. No cost analysis or discussion of risks/adverse events.

Summary

To date, there is limited high quality evidence evaluating treatment effects in dysphagia post-lateral medullary stroke (LMS dysphagia). Level II evidence suggests that transcranial direct current stimulation and neuromotor electrical stimulation may improve swallowing outcomes for LMS dysphagia, however potential confounders and differences in outcome measurement limits the application of this research to clinical practice. There is no high-quality research evidence to guide assessment practices in LMS dysphagia.

Implications for Practice/research

Further research is required to guide the management of LMS dysphagia in clinical practice.

What would you tweet? (140 characters)

Time to engage in more dysphagia research for LMS sufferers.

Critical Appraisal Topic Group Team Members

Emily Dalmau, Penni Burfein, Rachel Levine, Julia Liley, Nadine Foster, Jennifer Muller (consumer), Natalie Barker (librarian), Annie Hill

CAT Lead: Emily Dalmau. Email: Emily.dalmau@health.qld.gov.au
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References

Mao, H., Lyu, Y., Li, Y., Gan, L., Ni, J., Liu, L., & Xiao, Z. (2021). Clinical study on swallowing function of brainstem stroke by tDCS. *Neurological Sciences*, *43*(1), 477–484. https://doi.org/10.1007/s10072-021-05247-6

Zhang, Ming, MS, Tao, Tao, MD, Zhang, Zhao-Bo, MS, Zhu, Xiao, PhD, Fan, Wen-Guo, PhD, Pu, Li-Jun, MB, Chu, Lei, MB, & Yue, Shou-Wei, PhD. (2016). Effectiveness of Neuromuscular Electrical Stimulation on Patients With Dysphagia With Medullary Infarction. *Archives of Physical Medicine and Rehabilitation*, *97*(3), 355–362. https://doi.org/10.1016/j.apmr.2015.10.104