:≡ Contents | ⬇ PDF / ePub | ⋯ More

Abstract

Background:

Aphasia is a common consequence of stroke, and people who live with this condition experience poor outcomes. Adherence to clinical practice guidelines can promote high-quality service delivery and optimize patient outcomes. However, there are currently no high-quality guidelines specific to post-stroke aphasia management.

Aims:

To identify and evaluate recommendations from high-quality stroke guidelines that can inform aphasia management.

Summary of review:

We conducted an updated systematic review in accordance with PRISMA guidelines to identify high-quality clinical guidelines published between January 2015 and October 20[...]
Primary searches were performed using electronic databases: PubMed, EMBASE, CINAHL, and Web of Science. Gray literature searches were conducted using Google Scholar, guideline databases, and stroke websites. Clinical practice guidelines were evaluated using the Appraisal of Guidelines and Research and Evaluation (AGREE II) tool. Recommendations were extracted from high-quality guidelines (scored > 66.7% on Domain 3: "Rigor of Development"), classified as aphasia-specific or aphasia-related, and categorized into clinical practice areas. Evidence ratings and source citations were assessed, and similar recommendations were grouped. Twenty-three stroke clinical practice guidelines were identified and 9 (39%) met our criteria for rigor of development. From these guidelines, 82 recommendations for aphasia

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management were extracted: 31 were aphasia-specific, 51 aphasia-related, 67 evidence-based, and 15 consensus-based.

Conclusion:

More than half of stroke clinical practice guidelines identified did not meet our criteria for rigorous development. We identified 9 high-quality guidelines and 82 recommendations to inform aphasia management. Most recommendations were aphasia-related; aphasia-specific recommendation gaps were identified in three clinical practice areas: "accessing community supports," "return to work, leisure, driving," and "interprofessional practice."

Introduction

Aphasia is an acquired language impairment that initially affects up to one-third of stroke survivors.[1,2] Speech and language therapy can significantly improve communication outcomes for people with aphasia;[3] however, comprehensive clinical guidance is needed to support the delivery of high-quality services. Clinical practice guidelines are systematically developed sets of recommendations, based on the best available research evidence and expert consensus.[4] Such guidelines support clinical decision-making, optimizing service delivery and patient outcomes by linking research evidence to practice in a clinically accessible resource.[4] The routine use of clinical practice guidelines can improve health[5] and economic outcomes[6] for people living with stroke.

Currently there are no clinical practice guidelines published in English that specifically and comprehensively guide aphasia management following stroke. Clinicians can access relevant recommendations within general stroke management guidelines; however, such guidelines vary in methodological quality and comprehensiveness and quickly become outdated with changes in the evidence-base. Over the past decade, systematic reviews have been conducted[7,8] to bridge this gap, identifying high-quality stroke clinical practice guidelines that contain recommendations for the clinical management of aphasia. These reviews provide a crucial resource for clinicians, given the absence of aphasia-specific guidelines; however, regular updates are required to keep pace with the rapidly evolving evidence-base. Therefore, we sought to update the most recent systematic review by Shrubsole et al.[7] with the following aims:

1. To identify clinical practice guidelines relevant to post-stroke aphasia management published or updated since January 2015.

2. To examine the methodological quality of identified clinical practice guidelines using the AGREE II instrument.[9]

3. To describe and synthesize recommendations for post-stroke aphasia management from clinical practice guidelines of the highest methodological quality.

4. To describe changes in the scope of guideline recommendations and the quality of evidence since 2015.

Methods

Design

Updated systematic review conducted and reported in alignment with PRISMA guidelines.[10] Title and abstract screening and full-text review were conducted using Covidence systematic review software (available at www.covidence.org) with data extraction managed using Microsoft Office Excel. The review protocol is available at: https://osf.io/9fp47/.

Search strategy

We replicated the two-phase search strategy used by Shrubsole et al.[7] Primary searches were performed using electronic databases: PubMed, EMBASE, CINAHL, and Web of Science. Gray literature searches were conducted within: Google Scholar, guideline databases, and using stroke websites. Bibliographies of relevant articles were hand-searched. Search terms included population (aphasia OR dysphasia OR stroke OR cardiovascular) and publication type (guidelines OR recommendation OR clinical practice guideline). Refer to Supplemental Table 1 for the search strategy.

Study selection process

Electronic database searches were conducted in July 2020 and updated in October 2022. Gray literature was searched in June 2021 and October 2022. Two appraisers (M.I. and E.B.) independently screened titles and abstracts. If a discrepancy arose, a third appraiser (M.K.) determined if the article should be included.

Inclusion and exclusion criteria

Clinical practice guidelines (defined as, statements that include recommendations intended to optimize patient care that are informed by evidence or expert consensus) were included if they: (1) related to the clinical management of stroke or aphasia in adults; (2) were published between January 2015 and date of search; (3) were available in English; (4) were multi-disciplinary or speech pathology specific in nature. Clinical practice guidelines were excluded if they: (1) related selectively to sub-arachnoid hemorrhage or stroke prevention or (2) were published as conference abstracts, theses, or systematic reviews.

Evaluation of guideline quality

Guideline quality was evaluated using the rigor of development (Domain 3) score of the AGREE II instrument, as it is considered most reflective of overall guideline standard and quality.[7,8,11] Domain 3 has eight items, rated on a 7-point Likert-type scale (1 = "Strongly Disagree"; 7 = "Strongly Agree"). Two reviewers (M.I. and E.B.) independently assessed guidelines following standard procedures. Domain scores were compared and where scores differed by more than two points, they were discussed to achieve a consensus. Domain scores were converted to a standardized percentage score, and as with previous reviews, the cut-off for inclusion was a rating of 66.67% to include the top third of the 7-point Likert-type scale.[7,8]

Evaluation of aphasia-relevant recommendations

Recommendations relating to aphasia management and their strength of evidence ratings were extracted from guidelines and categorized by clinical practice area. New clinical practice topic areas were devised where necessary. Overlapping recommendations, that is, those containing similar or the same wording, were organized together and counted as a single recommendation. Source citations for individual recommendations were retrieved and reviewed. If source citations were inconsistent with the recommendation or evidence rating, they were excluded. Where source citations were not available, guideline developers were contacted for information demonstrating recommendation-to-citation links. Recommendations not directly linked to an evidence source or expert consensus were excluded. Included recommendations were classified as *aphasia-specific* or *aphasia-related.* *Aphasia-specific* recommendations related to the clinical management of aphasia (e.g. language assessments or aphasia therapy). *Aphasia-related* recommendations included general rehabilitation considerations that were not aphasia or speech-pathology sp

however, they were relevant to clinical aphasia management (e.g. multi-disciplinary team considerations or discharge processes).

Results

Database and gray literature searches

In total, 1749 sources were retrieved through database searches and 41 sources through the gray literature search. Following the removal of duplicates, 1563 sources underwent title and abstract screening. Of these, 1456 were excluded as they did not meet the inclusion criteria. The remaining 107 sources underwent a full-text review, and 31 were evaluated using the AGREE II tool.[9] The selection process is illustrated in Figure 1.
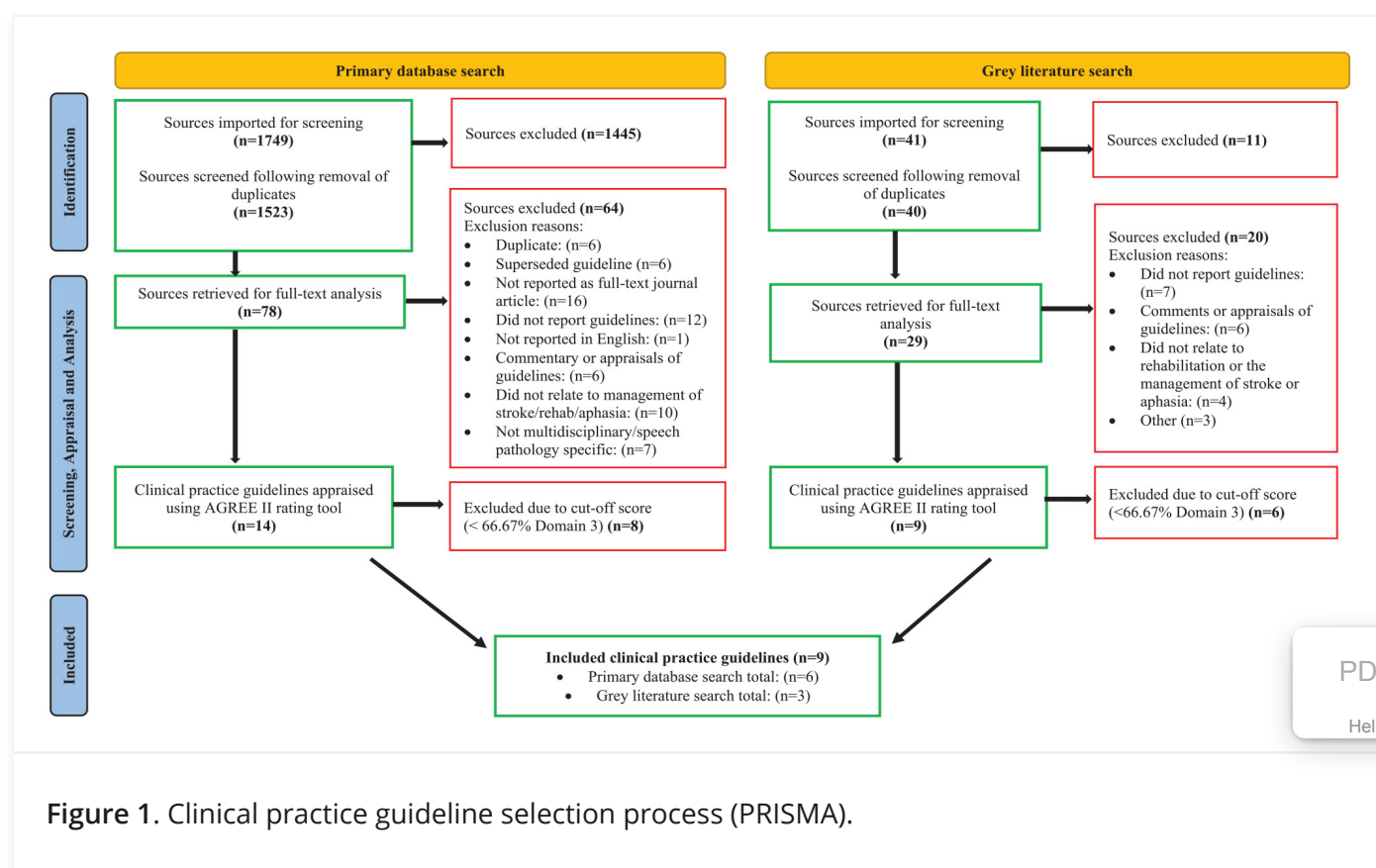
Figure 1. Clinical practice guideline selection process (PRISMA).

Evaluation of guidelines

We identified 23 stroke clinical practice guidelines and 9 (39%) met or exceeded our cut-off for AGREE II Domain 3: Rigor of Development. Included guidelines were from Australia, Canada, United States, and United Kingdom. Four guidelines were Canadian Stroke Best Practice Recommendations,[12–15] two guidelines were from the American Heart Association,

and American Stroke Association,[16],[17] one guideline was published by each of the Australian Stroke Foundation,[18] the UK Royal College of Physicians,[19] and the US Department of Veteran's Affairs and Department of Defense.[20] See Table 1, Supplemental Table 2 for guideline scope, and Supplemental Tables 4–9 for AGREE-II ratings.

Table 1. High-quality stroke clinical practice guidelines and AGREE II ratings.

Domain	Clinical practice guidelines				
	Canada: Tele-Stroke	Canada: Prehospital, Emergency, Acute	Canada: Rehab and Recovery	Canada: Mood, Cognition, Fatigue	AUS Stroke Foundation
1. Scope and purpose	83.33	88.89	88.89	80.56	94.44
2. Stakeholder involvement	69.44	75.00	75.00	69.44	86.11
3. Rigor of development	66.67	66.67	69.79	73.96	85.42
4. Clarity of presentation	88.89	94.44	88.89	83.33	83.33
5. Applicability	64.58	64.58	29.17	58.33	70.83
6. Editorial independence	58.33	62.50	58.33	62.50	75.00
7. Overall rating	71.88	75.35	68.34	71.35	82.52

Note. High-quality clinical practice guidelines were those that scored ⩾66.67 on Domain 3: Rigor of development (shaded in table).

Identified recommendations and links to underlying literature

A total of 178 recommendations relevant to aphasia management were extracted. Following review, four were removed as they were not within the scope of this review (e.g.

recommendations relating to staffing/organizational flow of stroke units). The remaining 174 recommendations were categorized across 16 topic areas (See Table 2). A further 14 recommendations were excluded due to the lack of relevancy to the clinical management of aphasia. The underlying evidence-base of each recommendation was reviewed to confirm links to the literature. A total of 36 recommendations were removed where links could not be established. The remaining 124 recommendations were reviewed within each topic area, and those with similar or the same wording were grouped together. This resulted in a total of 82 recommendations. Of the 82 included recommendations, 67 (82%) were evidence-based and 15 (18%) were consensus-based. Thirty-one (38%) were classified as aphasia-specific and 51 (62%) recommendations were classed as aphasia-related. Aphasia-specific recommendations are presented in Table 3. All recommendations relevant to aphasia management are listed in Supplemental Table 10 and are summarized in Figure 2. "Strength of Recommendation" and "Highest Level of Underpinning Evidence" ratings are provided in Supplemental Table 3.

Table 2. Aphasia-relevant recommendations by clinical practice area.

	Clinical practice area	Total recommendation, *n*	Aphasia-specific, *n*	Aphasia-related, *n*	Evidence-based, *n*
1.	Screening assessment	5	1	4	5
2.	Comprehensive assessment[a]	14	5	9	9
3.	Goal setting	5	1	4	5
4.	Treatment: amount, timing, and intensity	11	5	6	10
5.	Treatment: delivery[a]	5	1	4	5
6.	Treatment: Approaches	8	6	2	7
7.	Treatment: family and conversational partner training	6	3	3	5

	Clinical practice area	Total recommendation, *n*	Aphasia-specific, *n*	Aphasia-related, *n*	Evidence-based, *n*
8.	Aphasia-friendly information & education	6	3	3	5
9.	Clinician training[a]	5	1	4	4
11.	Counseling and mental health	5	3	2	3
12.	Discharge[a]	5	1	4	3
13.	Accessing community supports	3	0	3	3
14.	Return to work, leisure, driving	2	0	2	2
15.	Culturally and linguistically responsive practice[a]	1	1	0	0
16.	Interprofessional practice[a]	1	0	1	1
Total		82	31	51	67

Note. [a]New since 2017 review.

Table 3. Aphasia-specific recommendations by clinical practice area.

Aphasia-specific recommendations	Strength of evidence[a]	Highest evidence[b]
Screening assessment		
• "All stroke patients should be screened for communication disorders, ideally by a Speech Language Pathologist, and using a valid screening tool. If a Speech	C	Level II

Aphasia-specific recommendations	Strength of evidence[a]	Highest evidence[b]
Language Pathologist is not available, this should be done by another appropriately trained professional." *Canada: Rehab & Recovery*		
• "All stroke survivors should be screened for communication deficits using a screening tool that is valid and reliable." *AUS Stroke Foundation*	GPP	CB
Comprehensive assessment		
• "Those stroke survivors with suspected communication difficulties should receive formal, comprehensive assessment by a specialist clinician to determine the nature and type of the communication impairment." *AUS Stroke Foundation*	GPP	CB
• "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." *UK: Acute and Rehab*	Key Rec	Level I
• "Communication assessment may consider the individual's unique priorities using the ICF framework, including quality of life." *US: Rehab and Recovery*	Class IIb	Level IV
• "The impact of aphasia on functional activities, participation and quality of life, including the impact upon relationships, vocation and leisure, should be assessed and addressed as appropriate from early post-onset and over time for those chronically affected." *AUS Stroke Foundation*	GPP	CB
• "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." *UK: Acute and Rehab*	N/A	CB
• "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	N/A	Level I

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Aphasia-specific recommendations	Strength of evidence[a]	Highest evidence[b]
impairment-based or functional treatment." *UK: Acute and Rehab*		
• "Where a stroke patient is found to have aphasia, the clinician should: Document the diagnosis." *AUS Stroke Foundation*	GPP	CB
Goal setting		
• "Where a stroke patient is found to have aphasia, the clinician should: Identify goals for therapy, and develop and initiate a tailored intervention plan, in collaboration with the patient and family/carer." *AUS Stroke Foundation*	GPP	CB
• "They *(goals)* should be reviewed and updated regularly." *AUS Stroke Foundation*	Strong	Level I
• "Where a stroke patient is found to have aphasia, the clinician should: Reassess the goals and plans at appropriate intervals over time." *AUS Stroke Foundation*	GPP	CB
Treatment: amount, timing, and intensity		
• "Treatment for aphasia should be offered as early as tolerated." *AUS Stroke Foundation*	GPP	CB
• "In the first four months after stroke, people with aphasia should be given the opportunity to practice their language and communication with a speech and language therapist or other communication partner as frequently as tolerated."	N/A	Level I
• "For stroke survivors with aphasia, early aphasia therapy, starting within the first 4 weeks post stroke should be provided to maximise language recovery." *US Stroke Foundation*	Strong	Level I
• "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." *AUS Stroke Foundation*	Weak	Level I
• "For stroke survivors in the acute phase (up to six weeks post-onset), language therapy sessions (direct time on task) ranging between 30-45 minutes, two-three days per week	Weak	Level I

Aphasia-specific recommendations	Strength of evidence[a]	Highest evidence[b]
may be provided from stroke onset to week 6 post-stroke." *AUS Stroke Foundation*		
• "For stroke survivors with aphasia, speech and language therapy should be provided to improve functional communication." *AUS Stroke Foundation*	Strong	Level I
• "Speech and language therapy is recommended for individuals with aphasia." *US: Rehab and Recovery*	Class I	Level I
• "For stroke survivors with aphasia, speech and language therapy should be provided to improve functional communication, reading comprehension, general expressive language and written language." *AUS Stroke Foundation*	Strong	Level I
• "Persons with aphasia should have early access to a combination of intensive speech and language therapy and communication therapy according to their needs, goals, and impairment severity." *Canada: Rehab & Recovery*	B	Level I
• "For stroke survivors with chronic aphasia (> 6 months post stroke onset), intensive aphasia therapy (at least 10 hours/week of therapist led, individual or group therapy for 3 weeks, together with 5 hours or more, per week of self-managed training) may be used to improve aphasia." *AUS Stroke Foundation*	Weak	Level II
• "There is insufficient evidence to recommend for or against the use of intensive language therapy for aphasia." *US: DVA/DoD*	Neither for nor against	Level II
• "Intensive treatment is probably indicated, but there is no definitive agreement on the optimum amount, timing, intensity, distribution, or duration of treatment." *US: Rehab and Recovery*	Class IIa	Leve
Treatment: delivery		
• "Computerized treatment may be considered to supplement treatment provided by a speech–language pathologist." *US: Rehab and Recovery*	Class IIb	Level I
Treatment: approaches		
• "Where a stroke patient is found to have aphasia, the clinician should: Use alternative means of communication (such as gesture, drawing, writing, use of augmentative and	GPP	CB

Aphasia-specific recommendations	Strength of evidence[a]	Highest evidence[b]
alternative communication devices) as appropriate." *AUS Stroke Foundation*		
• "People with communication problems after stroke should be considered for assistive technology and communication aids by an appropriately trained, experienced clinician." *UK: Acute and Rehab*	N/A	CB
• "A variety of different treatment approaches for aphasia may be useful, but their relative effectiveness is not known." *US: Rehab and Recovery*	Class IIb	Level II
• "Group treatment may be useful across the continuum of care, including the use of community-based aphasia groups." *US: Rehab and Recovery*	Class IIb	Level II
• "Treatment for aphasia may include group therapy and conversation groups. Groups can be used to supplement the intensity of therapy during hospitalization and/or as continuing therapy following discharge." *Canada: Rehab & Recovery*	B	Level II
• "Treatment to improve functional communication can include language therapy focusing on: *a. Production and/or comprehension of words, sentences, and discourse (including reading and writing)." Canada: Rehab & Recovery*	C	Level I
• "Treatment to improve functional communication can include language therapy focusing on: *c. constraint-induced language therapy." Canada: Rehab & Recovery*	B	Level II
• "Treatment to improve functional communication can include language therapy focusing on: *e. Use of computerized language therapy to enhance benefits of other therapies." Canada: Rehab & Recovery*	C	Level I
Treatment: family and conversational partner training		
• "Treatment to improve functional communication should include supported conversation techniques for potential communication partners of the person with aphasia." *Canada: Rehab & Recovery*	A	Level I
• "Treatment for aphasia should include communication partner training." *US: Rehab and Recovery*	Class I	Level I

Aphasia-specific recommendations	Strength of evidence[a]	Highest evidence[b]
• "Environmental barriers facing people with aphasia should be addressed through training communication partners, raising awareness of and educating about aphasia to reduce negative attitudes, and promoting access and inclusion by providing aphasia-friendly formats or other environmental adaptations. People with aphasia from culturally and linguistically diverse backgrounds may need special attention from trained healthcare interpreters." *AUS Stroke Foundation*	GPP	CB
• "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." *UK: Acute and Rehab*	N/A	Level II
Aphasia-friendly information and education		
• "All written information on health, aphasia, social and community supports (such as that available from the Australian Aphasia Association or local agencies) should be available in an aphasia-friendly format." *AUS Stroke Foundation*	GPP	CB
• "All stroke survivors and their families/carers should be offered information tailored to meet their individual needs using relevant language and communication formats." *AUS Stroke Foundation*	Strong	Level II
• "Where a stroke patient is found to have aphasia, the clinician should: Explain and discuss the nature of the impairment with the patient, family/carers and treating team, and discuss and teach strategies or techniques which may enhance communication." *AUS Stroke Foundation*	GPP	CB
• "Relevant members of the interdisciplinary team should provide specific and tailored training for carers/family before the stroke survivor is discharged home. This training should include, as necessary, personal care techniques, communication strategies, physical handling techniques, information about ongoing prevention and other specific stroke-related problems, safe swallowing and appropriate dietary modifications, and management of behaviours and psychosocial issues." *AUS Stroke Foundation*	Weak	Level I

Aphasia-specific recommendations	Strength of evidence[a]	Highest evidence[b]
• "Environmental barriers facing people with aphasia should be addressed through training communication partners, raising awareness of and educating about aphasia to reduce negative attitudes, and promoting access and inclusion by providing aphasia-friendly formats or other environmental adaptations." *AUS Stroke Foundation*	GPP	CCB
Clinician training		
• "All health care providers working with persons with stroke across the continuum of care should undergo training about aphasia and other communication disorders, including the recognition of the impact of aphasia and methods to support communication such as Supported Conversation for Adults with Aphasia (SCATM)." *Canada: Rehab & Recovery*	C	Level I
Counseling and mental health		
• "Stroke survivors with chronic and persisting aphasia should have their mood monitored." *AUS Stroke Foundation*	GPP	CB
• "People who have had a stroke with resulting communication limitations should be screened for anxiety using appropriate methods validated for aphasic people who have experienced a stroke." *Canada: Mood, Cognition and Fatigue*	B	Level II
• "For people who experience some degree of communication challenge or deficits following stroke, appropriate strategies that do not rely on verbal communication should be implemented for screening of possible post-stroke depression to ensure adequate detection and assessment, and access to appropriate treatment." *Canada: Mood, Cognition and Fatigue*	C	Level III-2
Discharge		
• "A locally developed protocol or standardised tool may assist in implementation of a safe and comprehensive discharge process. This tool should be aphasia and cognition friendly." *AUS Stroke Foundation*	N/A	CB
Culturally and linguistically responsive practice		
• "People with aphasia from culturally and linguistically diverse backgrounds may need special attention from	GPP	CB

Aphasia-specific recommendations	Strength of evidence[a]	Highest evidence[b]
trained healthcare interpreters." *AUS Stroke Foundation*		

Note. "Highest Evidence" rating is based on study design only. Methodological quality has not informed this rating.

a   Strength of Evidence Ratings:

GRADE:[21]

Strong = All/most would benefit.

Weak = The majority would benefit, but many would not.

ACC/AHA:[22]

Class I (strong) = Treatment/procedure/intervention is useful/effective for most.

Class IIa (moderate) = Treatment/procedure/intervention is reasonable and can be useful/effective/beneficial.

Class IIb (weak) = Benefit only marginally exceeds risk *or* usefulness/effectiveness is unclear.

Class III (no benefit) = Treatment/procedure/intervention is not effective/beneficial/recommended

Class III (harm) = Treatment/procedure/intervention is potentially harmful. Not recommended.

Canadian Stroke Best Practice Recommendations:[23]

A = Desirable effects clearly outweigh undesirable effects or undesirable effects clearly outweigh desirable effects.

B = Desirable effects outweigh or are closely balanced with undesirable effects or undesirable effects outweigh or are closely balanced with desirable effects.

C = Writing group consensus and/or supported by limited research evidence.

b   Highest Evidence using NHMRC Level of Evidence Classification:[24]

Level I = Systematic review; meta-analyses of RCTs.

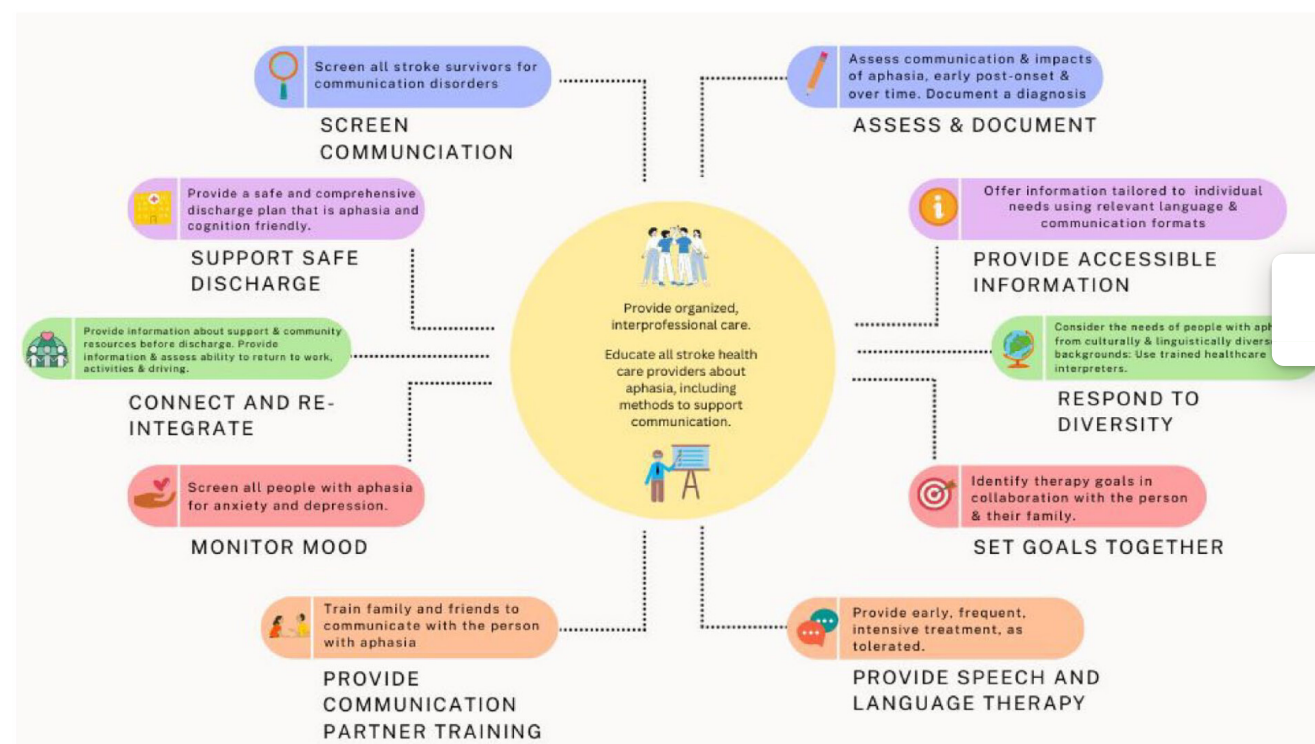Level II = RCT; prospective cohort study.

Level III-1 = Pseudorandomised control trial.

Level III-2 = Comparative study with concurrent controls.

Level III-3 = Comparative study without concurrent controls.

Level IV = Case series.

CB = Consensus-based.

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An updated systematic review of stroke clinical practice guidelines to inform aphasia management - Bridget Burton, Megan Isaacs, Emily Broga…

Figure 2. Best practice aphasia management after stroke: An overview.

Discussion

A total of 82 recommendations from nine high-quality clinical practice guidelines were identified in the current review, an increase from the 76 recommendations from five guidelines identified in 2017.[7] The number of included recommendations across reviews is not directly comparable however, as not all guidelines included in the 2017 review, were included in the current review (see Supplemental Table 2). While the total number of recommendations was relatively unchanged since the last review, there was a substantial increase in the number of clinical practice guidelines both identified and included. Of concern however, was that 61% of the clinical practice guidelines appraised did not meet our minimum standard for inclusion as a high-quality source. Among those that did, there was still considerable variation in quality ratings. There is no agreement about the AGREE-II cut-off scores that should be used to distinguish between high- and low-quality clinical practice guidelines and arbitrary changes to cut-off scores can change quality categorization.[25] As such, it is recommended that health professionals select the highest rated guidelines to inform their clinical decisions.[25] In our review, the guideline with the overall highest AGREE-II rating and the most aphasia-relevant recommendations, was the Australian Stroke Foundation Living Guideline (85.42%).[18] Living guidelines use continuous surveillance and rapid response to continually integrate new relevant evidence into clinical guidelines, addressing the perennial problem of rapid loss of currency.[26]

As per the previous review,[7] there were fewer aphasia-specific, than aphasia-related recommendations. When considered by topic area, aphasia-specific recommendations current review predominately related to therapy and treatment approaches, comprehensive assessment, and aphasia-friendly information and education. New topic areas were created for recommendations relating to comprehensive assessment; clinician training; treatment delivery; discharge; culturally and linguistically responsive practice; and interprofessional practice. We found no aphasia-specific recommendations in the areas of: return to work, leisure and driving; accessing community supports; or interprofessional practice. Return to work and driving have been identified as priorities by stakeholders in aphasia rehabilitation.[27] Return to driving is a priority for people with aphasia and return to work for

clinicians.[27] Future aphasia research should seek to bridge these gaps through targeted research.

Most aphasia-specific recommendations identified in our review were formulated through consensus, listed as good practice points, or had limited/weak evidence supporting them. Consensus-based recommendations serve an important role, as they provide advice for areas with an emerging evidence-base. However, only the Australian Stroke Foundation guidelines provided explicit information on the nature of group consensus processes, making it difficult to ascertain how consensus was achieved for many recommendations.[18] Greater transparency in future guideline iterations would support the trustworthiness of consensus-based recommendations.[28]

Our review process was complicated by the different strength of evidence grading systems used across the clinical practice guidelines. Both the Australian Stroke Foundation and the Department of Veterans Affairs and USA Department of Defense adopted the GRADE (Grading of Recommendations, Assessment, Development and Evaluation) method in the development of their guidelines.[18,20] The GRADE method has only two strength of recommendation classifications ("strong" and "weak"), or alternatively classifies a recommendation as a "good practice point" (consensus-based recommendation).[21] In contrast, the American Heart Association adopted the American College of Cardiology/American Heart Association (ACC/AHA) Clinical Practice Guideline Recommendation Classification System, which assigns Classes I-III.[22] The Canadian Stroke Best Practice Recommendations used a modified GRADE method with an alphabetical ranking system to describe strength of recommendations (A, B, C).[23] The UK Royal College of Physicians did not adopt a hierarchal grading system for their guidelines, and instead formulated "key recommendations" identified through a consensus process.[19] Just as these disparate systems were a challenge to the comparison of evidence in our review process, they likely pose similar challenges for guidelines users. Use of a universally recognized, unambiguous grading system may promote transparency when reporting and describing the evidence-base, while simultaneously reducing inconsistencies in evidence interpretation.[21]

Limitations

It is a limitation of our research that where links to the underlying evidence-base could not be established, recommendations were excluded. While best efforts were made to establish recommendation-to-citation links (i.e. by contacting guideline developers), some could not be established, and clinically relevant recommendations were excluded. Other limitations

include the exclusion of non-invasive brain stimulation and pharmacological interventions, guidelines in languages other than English, and care standards. Care standards (non-governing quality-of-care statements published by best-practice groups) were not reviewed in this study as their development methods can vary widely, compromising reliability and quality.[29] However, care standards play an important role in supplementing clinical practice guidelines, and clinicians are encouraged to refer to high-quality care standards such as the Australian Aphasia Rehabilitation Pathway.[30] In this review, we did not use the PICO framework[24] to organize treatment-related recommendations by area of outcome (e.g. language), but rather instead grouped recommendation by area of practice, in line with the previous review.[7] Also of note, is that our "Highest Evidence" ratings are based on study design alone. Consideration of risk of bias/methodological quality may alter these ratings.

Conclusion

We identified 82 recommendations from nine high-quality clinical practice guidelines that can inform clinical practice for people with post-stroke aphasia. There is a need for aphasia-specific research in "accessing community supports," "return to work, leisure, driving," and "interprofessional practice." Rigorous research in these areas may strengthen the existing evidence-base and improve the clinical services delivered to people with aphasia.

Declaration of conflicting interests

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Supplemental Table 1. Example Search Strategy and Databases Searched

Primary Electronic Databases Searched:
1. CINAHL
2. EMBASE
3. PubMed
4. Web of Science

Search Dates: July 2020 and updated October 2022

Search terms:
1. Guideline *or* guidelines
2. Clinical practice guideline *or* clinical practice guidelines
3. Recommendation *or* recommendations
4. 1 or 2 or 3
5. Aphasia
6. Dysphasia
7. 5 or 6
8. Stroke
9. Cardiovascular
10. 8 or 9
11. 7 or 10
12. 4 and 11

Guideline Databases, Stroke Websites and Other Sources Searched:

Source	Location
The Stroke Foundation	https://informme.org.au/en/Guidelines/Clinical-Guidelines-for-Stroke-Management

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