



A national approach to improving aphasia services

Application of a knowledge transfer and exchange framework

Emma Thomas, Emma Power*, Linda Worrall, Miranda Rose, Leanne Togher, and Alison Ferguson

KEYWORDS

APHASIA

KNOWLEDGE, TRANSFER & EXCHANGE

EVIDENCE TO PRACTICE GAP

REHABILITATION

EVIDENCE-BASED PRACTICE

THIS ARTICLE HAS BEEN PEER-REVIEWED

Reducing the evidence-to-practice gap to improve consumer health outcomes is currently a key policy agenda of health services worldwide. The National Health and Medical Research Centre (NHMRC) Centre for Clinical Research Excellence (CCRE) in Aphasia Rehabilitation is a research program that aims to increase the aphasia research evidence base and facilitate the translation of the best available evidence into practice. In collaboration with clinicians and consumers, the CCRE Aphasia is developing the Australian Aphasia Rehabilitation Pathway (AARP). The AARP is a consumer-focused, evidence-based tool that aims to improve outcomes for people with aphasia and their families. The AARP employs a knowledge transfer and exchange approach and strategic collaboration between research producers and users through a community of practice (CoP) to maximise implementation of the AARP.

Introduction

The evidence-to-practice gap

The evidence-to-practice gap is an increasing area of focus for clinicians, consumers, researchers and policy makers worldwide (Grimshaw, Eccles, Lavis, Hill, & Squires, 2012). Unfortunately, not all health consumers receive effective evidence-based treatments (McGlynn et al., 2003) and there may be a significant time-lag ranging from 8 to 15 years for research evidence to be integrated into clinical practice (Dobbins, Ciliska, Cockerill, Rurnsley, & DiCenso, 2002).

Research data from studies involving clinicians, consumers and health service audits indicate that the evidence-to-practice gap is also a challenge in aphasia rehabilitation. In a survey of 188 Australian speech pathologists, clinicians reported that strong scientific evidence to support aphasia rehabilitation practices was lacking and that existing evidence was very difficult

to translate into real-work contexts (Rose, Ferguson, Power, Togher, & Worrall, 2013). In relation to aphasia assessment, recommendations suggest that measures should encompass communication activity/participation and environment (NSF, 2010). However, clinicians report more frequently utilising impairment-based measures in clinical practice (Rose et al., 2013; Verna, Davidson, & Rose, 2009). With regards to treatment, the Australian literature reports that very few people receive early aphasia intervention, with one study documenting only 4 of 27 participants with aphasia received treatment in the first four weeks post-stroke (Godecke, Hird, Lalor, Rai, & Phillips, 2012). There is also limited opportunity for people with aphasia to access ongoing treatment after discharge from inpatient rehabilitation and a predominance of weekly individual service provision models (Rose et al., 2013; Verna et al., 2009). People with aphasia and their families also highlight gaps in practice including reduced opportunity for intensive and long-term rehabilitation options as well as lack of timely and accessible health-related information (Worrall et al., 2011). Data from the National Stroke Foundation Rehabilitation Services (2012) audit reinforce these findings regarding information provision. The audit showed that of 2821 stroke survivors and their families, 975 (35%) were not offered information tailored to meet their needs using relevant language and communication formats (NSF, 2012). Many clinicians recognise the issues they face in the evidence-to-practice gap and report a need for packaged evidence-based therapy resources (Power, Hadeley, Miao, & O'Halloran, 2013) and assistance in implementing evidence-based care (Rose et al., 2013).

The CCRE in aphasia rehabilitation

A collaborative research centre in aphasia rehabilitation is undertaking a bold and ambitious national project to increase the aphasia research evidence base and facilitate the translation of the best available evidence into practice. The Centre for Clinical Research Excellence (CCRE) in Aphasia Rehabilitation (CCRE Aphasia) is a five-year, Australian research program funded by the National Health and Medical Research Centre (NHMRC). The CCRE Aphasia is a virtual research centre with members across five Australian and two American university sites. The team consists of senior aphasia researchers, postdoctoral research fellows and research students in partnership with

* E. Thomas and E. Power contributed equally to this work



Emma Thomas (top), Emma Power (centre) and Linda Worrall

clinicians, managers and consumer organisations with interests in aphasia rehabilitation (see Table 1). The CCRE Aphasia has sought broad representation from the aphasia rehabilitation community in order to form a CCRE Aphasia community of practice (CoP). A CoP is a group of people who share an interest and/or a profession. Through a process of sharing information and experiences with the group, members learn from each other, and have an opportunity to develop themselves personally and professionally (Lave & Wenger, 1991). Having a larger, more representative brains trust was important because the CCRE aims to conduct a large research program to produce the Australian Aphasia Rehabilitation Pathway (AARP). The AARP is a consumer-focused clinical pathway of best practice for implementation by speech pathologists across the continuum of care. The AARP aims to improve the overall patient journey for people with aphasia through

establishing evidence-based and expert-endorsed care standards.

The challenge

Despite the enormous efforts of researchers, clinicians, consumers and health services in the creation and promotion of clinical guidelines/pathways, research shows that dissemination alone does not lead to their implementation (Davis et al., 2003). As a key aim of the CCRE Aphasia is to ensure effective *translation* of research outcomes into clinical practice, the CCRE Aphasia needs to consider how to best encourage the efficient and effective transfer of the AARP into the Australian health system beyond dissemination. To accomplish this, the CCRE seeks to understand theories of knowledge creation and transfer as well as the evidence for effective interventions that support uptake of evidenced-based practice in health services.

A way forward with knowledge transfer and exchange

Knowledge transfer and exchange (KTE) is one approach that aims to address the issue of the evidence-to-practice gap. KTE is a burgeoning area of practice which involves a planned, dynamic interchange of knowledge between both research producers and users so research evidence will be utilised in health service policy and practice (Canadian Institutes of Health Research, 2013). Proponents of KTE propose effective research uptake requires collaboration with a variety of stakeholders, mutual understanding and hard work both from those who produce and those who use knowledge (Graham et al., 2006). In this article we describe how a collaborative KTE approach can be applied to the area of aphasia rehabilitation through the development of the AARP as well as providing awareness of the AARP and how it may benefit clinical practice.

Developing the AARP using a KTE approach

The CCRE Aphasia developed a comprehensive plan to develop a clinically useful aphasia pathway (AARP) in collaboration with key stakeholders in the CoP (Power & Worrall, 2011). To help guide its development, the CCRE Aphasia developed the AARP with reference to a theoretical framework of KTE by Graham et al. (2006) known as “The Knowledge-to-Action-Process (KTA) Framework” (see Power, page 24 in this issue for more detail). The KTA framework is ideal for the CCRE Aphasia because it contains guidance on how to create the AARP (“knowledge creation”) and what to consider in order to get it into the real-world context (“action cycle”; Power & Worrall, 2011). The KTA framework also encourages cooperation and dialogue among researchers, clinicians and consumers (called “tailoring” of knowledge) during creation of the AARP and its implementation (see Figure 1). We now outline the process of the development of the AARP with the CoP within a KTE framework.

Knowledge creation

To get to the end product of an aphasia pathway or guideline, there needs to be a research evidence base (“knowledge inquiry”), that evidence base needs to be collated and synthesised (“knowledge synthesis”) and then converted to a more user-friendly format/package

Table 1. Characteristics of the CCRE Aphasia research program	
Characteristics	Details
Funding source	National Health and Medical Research Council (NHMRC)
Funding and duration	\$2.5m over five years (2010–14)
Investigators	12
Postdoctoral research fellows	7
Research affiliates	25
Australian universities represented	5 Australian and 2 American
Higher degree research student affiliates	16
Clinical affiliates	Approximately 200
Consumer groups	The Australian Aphasia Association; National Stroke Foundation
Client scope	People with aphasia following stroke
Continuum of care	Pre-hospital and emergency care. Acute hospital, inpatient and outpatient rehabilitation, community, residential care – to cover the full scope of communication recovery post stroke
Service settings	Public and private health services
Aphasia rehabilitation approaches	Bringing together researchers and clinicians with expertise in impairment and social aphasia rehabilitation approaches (International Classification of Functioning [ICF]; WHO, 2001)
Current number of projects	50
Number of publications produced in 2012	37
Website	www.ccreaphasia.org.au



Miranda Rose (top), Leanne Togher (centre), and Alison Ferguson

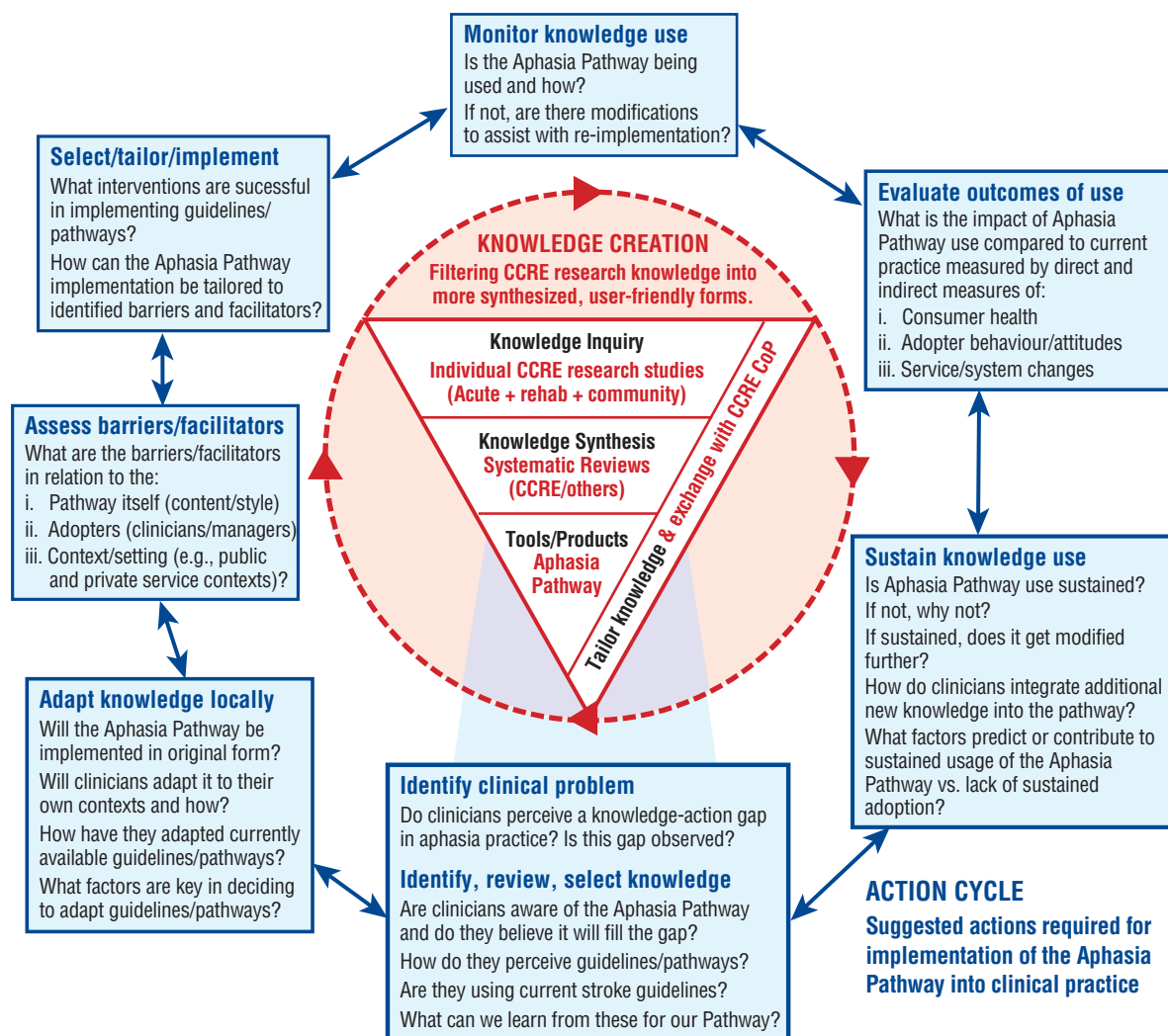


Figure 1. Map of the CCRE Aphasia rehabilitation research program to the knowledge creation and action cycle of the Knowledge-to-Action-Process Framework

Note. AARP = Australian Aphasia Rehabilitation Pathway. Reproduced and adapted with permission from Graham et al., (2006). Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions*, 26, 13–24.

(“knowledge tools”; Graham et al., 2006). This knowledge creation process is represented in the KTA framework as an upside down triangle or funnel. With each process, knowledge should become more distilled and refined with the end product being the most valid and useful to stakeholders such as clinicians. “Tailoring” and exchange of knowledge between those creating knowledge and those who will use the knowledge is encouraged throughout the process.

Knowledge inquiry

Clinicians have identified that the lack of a strong aphasia evidence base can contribute to difficulties in implementing best practice for people with aphasia (Power et al., 2013). The formation of the CCRE Aphasia in 2009 has stimulated additional funding, collaboration and capacity for aphasia research inquiry in Australia. This has created a great impetus for Australian-based aphasia research across a wide-range of topic areas. One aim of the CCRE was to conduct research studies into areas of need in aphasia rehabilitation to increase the aphasia knowledge base. CCRE research priorities have been determined by studying the views of both people with aphasia (Worrall et al., 2011)



Figure 2. Major content areas of the AARP currently being developed by CCRE researchers and clinical affiliates

and clinicians (Rose et al., 2013) on current clinical practice and research gaps. These research priorities have informed a series of CCRE Aphasia funded studies to increase the evidence base for the AARP (see Table 2).

Ongoing conversations around research needs and activities have also occurred through the CCRE CoP. This dialogue allows the CoP to more regularly exchange and “tailor knowledge” about which research studies are important to different stakeholders. Additionally, a

Table 2. Priority research areas (Rose et al., 2013) and current CCRE Aphasia projects

Examples of priority research areas (Rose et al., 2013)	Examples of CCRE Aphasia projects
Culturally appropriate treatments for culturally and linguistically diverse (CALD) and Indigenous Australians	National survey of SLP practices in aphasia management for CALD populations; Communication difficulties after stroke in Indigenous Australians
Combining impairment and functional treatments	The UQ Aphasia Language Impairment and Functioning Treatment (LIFT) program
Using principles of neuroplasticity	Saliency of stimuli; The Commfit App
Intensive treatments	Very early aphasia therapy; CIAT vs. M-MAT study
Web- and computer-based treatments	The effectiveness of telerehabilitation for aphasia; NHMRC Partnership grant
Inequities in service availability across Australia	CALD service provision across levels of care
Sentence-level and discourse treatments	Discourse across the lifespan; Narrative interventions in aphasia
Conversation partner training	Conversation partner training with student health professionals; with health professionals; and with friends of people with aphasia
Establishing aphasia centres and efficacy of aphasia groups in Australia	Formation of Aphasia United (aphasiaunited.org.au); Community aphasia groups efficacy trial; Community aphasia group survey; Systematic review of community aphasia groups
Music therapy	An evaluation of choral singing
Fostering hope and being realistic	Prognosis survey
<i>Note.</i> For further information regarding these projects please contact the corresponding author	

mechanism was required to facilitate more active research participation in these research studies. To do this, the Communication Research Registry (www.ccregistry.org.au) has been developed. The registry allows researchers, clinicians, and consumers interested in being involved in research to work together on common goals. The CCRE Aphasia also communicates research messages through dissemination of our findings to key stakeholders through research, clinical and consumer conferences and publications.

Knowledge synthesis

Time-poor clinicians require readily available answers to their clinical questions. However, without collation of the developing current research knowledge, clinicians are

required to trawl through an increasing number of primary studies of various quality and make sense of potentially contradicting information. To address this challenge, the next stage in creating meaningful knowledge for clinicians and researchers is “knowledge synthesis”. The process involves identifying, appraising and collating relevant evidence for a specific question.

Methods of knowledge synthesis may include Clinical Practice Guidelines (CPGs), systematic reviews and meta analyses (Graham et al., 2006). To identify the level of synthesis that had occurred across aphasia rehabilitation, a systematic review of international stroke and aphasia-specific CPGs was undertaken (Rohde, Worrall & Le Dorze, 2013). The quality of the CPGs and their comprehensiveness in relation to aphasia recommendations was analysed. Aphasia-related recommendations were extracted from the guidelines, categorised into topics and graded using the NHMRC levels of evidence (2009). The analysis revealed a paucity of high-quality aphasia-specific recommendations to inform practice and large amounts of evidence had not been synthesised into systematic reviews. The CCRE therefore sought to find additional reviews and conduct key systematic reviews (e.g., the effect of environmental interventions on communication). These steps are critical to providing high-quality recommendations catching all the research evidence available for the AARP.

AARP: an online best practice resource

The lack of aphasia-specific recommendations and resources in CPGs further informed the need to create a web-based “one-stop-shop” for aphasia rehabilitation that included: recommendations, synthesised and regularly updated high-quality evidence, and useful resources. Within the acute stroke setting, it is suggested that care pathways can enhance the practical delivery of evidence-based care through the prompting of important interventions (Kwan, Hand, Dennis & Sandercock, 2004). With this in mind, the CCRE Aphasia engaged the CoP in a series of meetings to develop the ideal evidence-based care pathway for aphasia rehabilitation. The CoP expressed that aphasia rehabilitation is not simply a linear process but often *complex* and *dynamic* with multiple processes occurring at any one given time. The major aspects of aphasia management were identified (e.g., referral to speech pathology, initial interview/screening, assessment and treatment) and structured into nine “domains” in order to enhance practical application and web-based usability (see Figure 2). Key areas to be included within each domain were identified from the important criteria in a “clinical pathway” (Kinsman et al., 2011), literature on how guidelines could be modified to enhance their uptake (Gagliardi et al., 2011) and the principles of evidence-based practice (Sackett et al., 1996). These areas include:

1. A summary of the evidence
2. Recommendations for practice
3. Practical tips
4. Research evidence
5. Clinician perspectives
6. Client perspectives
7. Resources

The content of each section of the AARP was sent to a group of CCRE researchers (n = 25) and clinical affiliates (n = 45) for comment using the online program "Google Docs". The aim of this process was to obtain consensus and feedback on the AARP content, draft potential "best practice statements" and develop a list of appropriate resources for each section. Validation of the "best practice statements" will occur through a modified delphi technique called the RAND/UCLA Appropriateness Method (RAM) (Fitch et al., 2001) in October 2013. For web development, tailoring knowledge occurred through surveying clinicians at the 2013 National Speech Pathology Australia Conference on their intended use and aspirations of the website. Additionally, a feedback portal is being developed on the site to enable ongoing input from users and usability testing will be completed with a sample of clinicians.

Members of the CoP have provided overwhelming positive feedback about the CoP meetings and the collaboration that has occurred during the AARP's development. When asked about what they found beneficial about the the most recent CoP meeting, responses centred around the main themes of collaboration (e.g., "*The ability to interact collaboratively with peers, clinicians, researchers and PWA [people with aphasia]*") of being able to contribute to the profession (e.g. "*Feeling as though I have contributed to (and [be] informed about) something that will benefit my profession and clients*") and for perspectives to be shared and heard (e.g. "*The opportunity for my opinion to be heard and valued*"). Clinicians have been key to understanding potential barriers and facilitators to the implementation of the AARP as discussed below in the action cycle.

Action cycle

The challenge for the CCRE CoP is not only to develop the AARP but to ensure that it can be successfully used in aphasia services across Australia for the benefit of people with aphasia and their families. The action cycle of the knowledge-to-action model provides a framework for the translation of the AARP into practice and involves processes of knowledge selection, adaptation, monitoring and evaluation (Graham et al., 2006; see Figure 1). Clinicians have provided input and received information at every stage of knowledge creation and therefore, a process of constant tailoring and adaptation of the tool to the clinical context has occurred. Through ongoing conversations with the CoP, the CCRE considered potential "barriers and facilitators" for the AARP's implementation. Obtaining clinicians' and consumers' ideas on potential barriers and facilitators has influenced development of the actual pathway as well as providing new items for future action (e.g., identify and contact key organisational opinion leaders in health). As it nears completion, the AARP will be further developed through clinical trial sites to understand the use of the pathway in real-world clinical settings. Additionally, CCRE Aphasia researchers along with a higher degree research student are currently investigating which strategies are successful in translating the AARP into clinical practice (see Figure 1 "select, tailor and implement KTE interventions"). For further information on the evidence for KTE interventions see Power (page 24 of this issue). The systematic clinical implementation of the AARP is beyond

the scope of the current CCRE Aphasia. Future plans for grant applications are underway to enable the implementation phase ("action cycle"). There are also future plans to translate the evidence and the pathway for people with aphasia and their families. This will enable them to negotiate their rehabilitation with greater understanding and expectations.

What will the AARP provide the clinical community

Our vision is that the AARP will prove to be a useful tool for everyday practice for speech pathologists working with people with aphasia. Clinicians and consumers will be able to obtain information about aphasia rehabilitation across the continuum of care and be informed about the current evidence and best care standards. Access to clinically relevant resources and a community of people working towards enhancing aphasia care will support the translation of knowledge into practice. The AARP will be released in November 2013 under the domain name www.aphasiapathway.com.au. Clinicians are encouraged to provide feedback on the website through the feedback portal and join the CoP (via the CCRE Aphasia website www.ccreaphasia.org.au) to help shape the future developments and implementation of the AARP.

Conclusion

The CCRE Aphasia has utilised a KTE approach with a dynamic CoP to develop a web-based tool known as the AARP. The AARP aims to close the research-practice gap in aphasia rehabilitation by providing clinicians with expert-endorsed care standards, synthesised evidence and resources. Future directions will enable the tool to be translated into the clinical context to improve consistency in aphasia services and ensure that that people with aphasia achieve the best health outcomes possible.

References

- Canadian Institutes of Health Research. (2013). *About knowledge translation*. Retrieved from <http://www.cihr-irsc.gc.ca/e/29418.html>
- Davis, D., Evans, M., Jadad, A., Perrier, L., Rath, D., Ryan, D., ... Zwarenstein, M. (2003). The case for knowledge translation: Shortening the journey from evidence to effect. *British Medical Journal*, 327, 33–35.
- Dobbins, M., Ciliska, D., Cockerill, R., Barnsley, J., & DiCenso, A. (2002). A framework for the dissemination and utilization of research for health-care policy and practice. *Worldviews on Evidence-based Nursing presents the archives of Online Journal of Knowledge Synthesis for Nursing*, E9: 149–160. doi: 10.1111/j.1524-475X.2002.00149.x
- Fitch, K., Bernstein, S.J, Aguilar, M. D. Burnand, B., LaCalle, J. R., Lazaro, P...Kahan, J.P. (2001). *The RAND/UCLA appropriateness method user's manual*. Rand Corporation. Retrieved from http://www.rand.org/pubs/monograph_reports/MR1269.html
- Gagliardi, A., Brouwers, M., Palda, V., Lemiwux-Charles, L. & Grimshaw, J. (2011). How can we improve guideline use? A conceptual framework of implementability. *Implementation Science*, 6(26).



CCRE Aphasia: Excellence in Aphasia Rehabilitation

Godecke, E., Hird, K., Lalor, E., Rai, T., & Phillips, M. (2012). Very early post stroke aphasia therapy: A pilot randomized controlled efficacy trial. *International Journal of Stroke*, 7(8), 605–674, E14–E115, doi: 10.1111/j.1747-4949.2011.00631.x. First published online 6 Oct 2011.

Graham, I.D., Logan, J., Harrison, M.B., Straus, S.E., Tetroe, J., & Caswell, W. (2006). Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions*, 26, 13–24.

Grimshaw, J., Eccles, M., Lavis, J., Hill, S., & Squires, J. (2012). Knowledge translation of research findings. *Implementation Science*, 7, 50.

Kinsman, L., Rotter, T., James, E., Snow, P., & Willis, J. (2010). What is a clinical pathway? Development of a definition to inform the debate. *BMC Medicine*, 8(1), 31.

Kwan, J., Hand, P., Dennis, M., & Sandercock, P. (2004). Effects of introducing an integrated care pathway in an acute stroke unit. *Age and Ageing*, 33, 362–267.

Kwan, J., & Sandercock, P.A.G. (2004). In-hospital care pathways for stroke. *Cochrane Database of Systematic Reviews*, E4. doi:10.1002/14651858.CD002924.pub2

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.

Lanyon, L., Rose, M., & Worrall, L. (2013). The efficacy of outpatient and community-based aphasia group interventions: A systematic review. *International Journal of Speech-Language Pathology*, 15(4), 359–374.

McGlynn, E., Asch, S.M., Adams, J., Keesey, J., Hicks, J., DeCristofaro, A., & Kerr, E.A. (2003). The quality of

health care delivered to adults in the United States. *New England Journal of Medicine*, 348, 2635–2645.

National Health and Medical Research Council. (2009). *Additional levels of evidence and grades of recommendations for developers of guidelines 2008–10*. Retrieved from https://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/developers/nhmrc_levels_grades_evidence_120423.pdf

National Stroke Foundation (NSF). (2010). *Clinical guidelines for stroke management 2010*. Melbourne: Author.

National Stroke Foundation (NSF). (2012). *National stroke audit: Rehabilitation services report 2012*. Melbourne: Author.

Power, E., Hadeley, K., Miao, M., & O'Halloran, R. (2013). *Knowledge transfer and exchange in aphasia and stroke rehabilitation*. CCRE in Aphasia Rehabilitation Fourth National Community of Practice meeting. Gold Coast, Qld.

Power, E., & Worrall, L. (2011, May). *Better pathways to living successfully with aphasia. Translating a national aphasia rehabilitation research program into clinical practice*. Clinical Aphasiology Conference, Florida, US.

Rohde, A., Worrall, L., & Le Dorze, G. (2013). Analysis of the quality of clinical guidelines for aphasia in stroke management. *Journal of Evaluation in Clinical Practice*. doi: 10.1111/jep.12023 First published online 1 March 2013.

Rose, M., Ferguson, A., Power, E., Togher, L., & Worrall, L. (2013). Aphasia rehabilitation in Australia: Current practices, and challenges and future directions.

International Journal of Speech-Language Pathology.
doi:10.3109/17549507.2013.794474

Sackett, D. L., Rosenberg, W. M. C., Gray, J. A. M., Haynes, R. B., & Richardson, W. S. (1996) Evidence-based medicine: What it is and what it isn't. *Article based on an editorial in the British Medical Journal*, 1996. 312, 71-72. Accessed at <http://www.cebm.jr2.ox.ac.uk/ebmisisnt>

Verna, A., Davidson, B., & Rose, T. (2009). Speech-language pathology services for people with aphasia: A survey of current practice in Australia. *International Journal of Speech-Language Pathology*, 11, 191-205.

World Health Organization. (2001). *International classification of functioning, disability and health (ICF)*; 2001. Geneva: WHO.

Worrall, L., Sherratt, S., Rogers, P., Howe, T., Hersh, D., Ferguson, A., & Davidson, B. (2011). What people with aphasia want: Their goals according to the ICF. *Aphasiology*, 25, 91-309-322.

All of the authors of this article – **Emma Thomas, Emma Power, Linda Worrall, Miranda Rose, Leanne Togher, and Alison Ferguson** – are affiliated with the Centre for Clinical Research Excellence (CCRE) in Aphasia Rehabilitation, University of Queensland, Brisbane, Australia. Each author has an academic research and/or teaching position at an Australian university including University of Queensland (Emma Thomas and Linda Worrall), University of Sydney (Emma Power and Leanne Togher), La Trobe University (Miranda Rose) and Newcastle University (Alison Ferguson).

Correspondence to:

Emma Power

*Discipline of Speech Pathology, Faculty of Health Sciences,
The University of Sydney,*

PO Box 170, Lidcombe, NSW 1825.

phone: +61 2 9351 9748

email: emma.power@sydney.edu.au