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**To cite this article:** Chris Code & Brian Petheram (2011) Delivering for aphasia, International Journal of Speech-Language Pathology, 13:1, 3-10, DOI: [10.3109/17549507.2010.520090](https://doi.org/10.3109/17549507.2010.520090)

**To link to this article:** <https://doi.org/10.3109/17549507.2010.520090>



Published online: 15 Feb 2011.



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## REVIEW

# Delivering for aphasia

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Providing a quality service for people with aphasia is a primary goal of speech-language pathologists working with neurogenic communication disorders. This paper reviews what is known about the incidence and prevalence of aphasia and what services are provided for people with aphasia. On the basis of the stroke data, the incidence of aphasia in the developed world ranges between 0.02–0.06% with prevalence ranging between 0.1–0.4%. Average hours of treatment for aphasic people in the developed world ranges between 1–5 hours per week, with a great deal of variability, although recent research suggests that intense treatment of ~9 hours per week over a relatively short period is needed in order to be effective. It is concluded that there is a significant gap between what the research suggests is the appropriate amount of treatment and actual provision throughout the English-speaking world.

**Keywords:** *Aphasia, incidence, prevalence, services for aphasia.*

## Introduction

In this paper we review the incidence and prevalence of aphasia in the developed world and the extent and limitations of the services that are provided by the community for people with aphasia in the English-speaking world. These topics have been of central concern to Pam Enderby, whose work has encompassed a broad spectrum reflecting a broad interest and concern for people with communication impairments and disabilities, with a particular focus on the provision of services for people who have aphasia. Our review is limited to those studies that have been conducted in the developed world and published in English.

We begin with an attempt to determine the size of the problem—the incidence and prevalence of aphasia. Incidence refers to the number of new cases occurring on an annual basis within a specific population and prevalence refers to the total number of cases that exist in that defined population. Incidence relates mostly to a condition in its acute stage and prevalence to the condition at more chronic and long-term stages. They both contribute to the impact of a condition on the services in place at any given time to provide for it. Planners and providers need to know if a condition is going to increase or reduce in a defined population in order to adjust provision to, for instance, serve an acute or chronic population.

Next we move on to an assessment of whether the services we provide as societies for people with aphasia are sufficient to meet the demand. We also refer to Enderby's work on coping with resource limitations in addressing these needs. She has taken a leading role in looking for radical solutions to the problem of this resource gap which is unlikely to ever be filled if all services are solely provided by qualified health professionals and given the competing demands for healthcare from groups that are seen as higher priority.

## The size of the problem

The estimated incidence of new cases and chronic prevalence of aphasia depends on what we recognize aphasia to be. However, what counts as aphasia is not such an easy question to answer, as there is a range of views on what it is and what we should consider it to be. Some make the case that a formal definition is required (McNeil & Pratt, 2001), some that the last thing we need is a formal definition (Marshall, 1989), and others make the pertinent point that what we call aphasia depends on what we believe language to be (Joanette & Ansaldo, 2000), and what we think “language” is is under constant ongoing revision. Relatively non-controversial is that aphasia is the generic term we use to describe a range of impairments in language use following brain damage. Some use the term to describe most

impairments to any part of language use (Joanette & Ansaldo, 2000), including impairments associated with right hemisphere damage and apraxia of speech, dementia, and traumatic brain injury, while others stress the interaction of language processing with other aspects of cognition, most particularly movement, attention, perception, and memory (Caplan & Waters 1999; Code, Tree, & Dawe, 2009; Crosson, 2000; Humphreys, Forde, Steer, Samson, & Connelly, 2007; Marshall, 1989; Murray, 1999). Still others prefer to reserve the term for describing impairments to componential aspects of language processing—syntax, phonology, morphology, lexical semantics, that appear to be most impaired following left hemisphere damage (McNeil & Pratt, 2001).

The issue of what aphasia is considered to be is not merely of esoteric academic interest, but has significant impact on clinical concerns and service provision. As the following shows, when attempting to obtain valid and reliable figures on its incidence and prevalence, it matters considerably. The precise incidence and prevalence of aphasia is unknown; partly because of this variety of conditions that have been or can be labelled as *aphasia*—what we say aphasia is will determine how often aphasia occurs and how many people will have aphasia. If we include the communication problems that result from traumatic brain injury, primary progressive aphasia, dementia, and right hemisphere damage, then incidence and prevalence increase. If we do not, then incidence and prevalence decrease. Incidence and prevalence in these broader populations is even more difficult to determine than if we limit our survey to the stroke population. Many cases of stroke do not enter hospital, some will never see a physician, and, even if they do, records may not be kept or contributed to surveys of incidence or prevalence.

Studies that have estimated the incidence and prevalence of stroke and of aphasia have used different methodologies and different criteria to determine the presence of aphasia (e.g., Engelter, Gostynski, Papa, Frei, Born, Ajdacic-Gross, et al., 2006; Langton Hewer, 1997; van der Gaag, Smith, Davis, Moss, Cornelius, Laing, et al., 2005), and comparisons of results can be unreliable. Incidence or prevalence of aphasia is often estimated based on the incidence and prevalence of stroke, and some surveys are assumed to under-estimate incidence and prevalence of stroke. There is also some variability noted in different parts of the world. Enderby made a significant contribution to addressing the problem of detecting and recognizing aphasia by developing the Frenchay Aphasia Screening Test (FAST) (Enderby, Wood, & Wade, 1986) and a number of studies have used the FAST for this purpose (e.g., Crawford, Dinsmore, Stout, Donnellan, O'Neill, & McGee, 2009; Enderby, Wood, Wade, & Hewer, 1987; Hilari, Northcott, Roy, Marshall, Wiggins, Chataway, et al., 2010).

In the UK the incidence of *stroke* is estimated to be 2 in 1000 of the population (over 61 million) or 0.2% (Langton Hewer, 1997; Warlow, 1998), but it is estimated that only 85% of people who have had strokes are admitted to hospital. So the incidence of 110,000 first strokes for the UK population is based on people who have had strokes and have been admitted to hospital (Ebrahim & Redfern, 1999) and will therefore be an under-estimate. In the US, the annual incidence of new strokes is estimated to be 795,000 (American Heart Association, 2010). With a US population of over 310 million ([www.cia.gov/library/publications/the-world-factbook/geos/us.html](http://www.cia.gov/library/publications/the-world-factbook/geos/us.html)), this suggests an incidence of .26%. There are ~6,400,000 people in the US community with stroke (a prevalence of 2.06%). A recent study of all stroke inpatients admitted to emergency departments in Ontario, Canada, covering the years 2004–2005, found that 35% of 3207 patients had aphasia at discharge (Dickey, Kagan, Lindsay, Fang, Rowland, & Black, 2010). The incidence of aphasia in the Ontario population was found to be 60 per 100,000 per year (an incidence of .06%)

As mentioned above, a number of researchers and writers over the years have adopted the practice of estimating the incidence and prevalence of aphasia from stroke (e.g., a recent study by van der Gaag et al., 2005). Recently, Engelter et al. (2006) conducted a study in the Swiss city of Basle on a population of 188,015. From this population, 269 people had experienced a stroke, of whom 80 (30%) had aphasia. The overall incidence rate of aphasia following stroke was 43 per 100,000: an incidence of .043%.

Enderby and Emerson (1995) estimated a UK incidence of *aphasia* of 66 per 100,000 population (.066%) and 50 per 100,000 population (.05%) at 6 months post-stroke. The American National Aphasia Association (2010), whose estimate is based on an earlier estimate (Klein, 1995), suggests that the incidence of aphasia is ~83,000 in the US, with a prevalence of one million people with some degree of aphasia. With a US population of over 310 million ([www.cia.gov/library/publications/the-world-factbook/geos/us.html](http://www.cia.gov/library/publications/the-world-factbook/geos/us.html)), this suggests an incidence of ~.02% and a prevalence of .32%. The Australian Aphasia Association (2010) estimates that 80,000 people have aphasia in Australia, a prevalence of .37%, based on the Engelter et al. (2006) findings for Switzerland. The UK Bristol Stroke Study examined survival from stroke and found that ~30% die within the first few weeks, 30% recover completely, and ~40% have chronic disability, including aphasia (Langton Hewer, 1997). The UK's professional association, The Royal College of Speech and Language Therapists, makes similar estimates based on past research studies. More recently, Law, Rush, Pringle, Irving, Hubby, Smith, et al. (2009) estimated the incidence of aphasia in three Scottish Health Districts to be .057 in a

population of 148,550, somewhat higher than in other studies.

The incidence of aphasia following stroke at acute stages is higher than at chronic stages. Kertesz (1989) found that from 93 aphasic patients assessed on the Western Aphasia Battery (WAB) at 1 month post-onset, up to 20% made "almost complete recoveries" by 12 months. Given that the WAB is recognized as being poor at detecting milder forms of aphasia (Katz, Hallowell, Code, Armstrong, Roberts, Pound, et al., 2000) this 20% is likely to be an over-estimate of recovery.

If we consider the communicative deficits subsequent to TBI as aphasic, incidence and prevalence escalate markedly. Incidence of head injury annually in the US is ~200 per 100,000 (Annegers, Grabow, Kurland, & Laws, 1980). Approximately one-third of those who sustain a closed head injury are reported to be aphasic (Luzzatti, Willmes, Taricco, Colombo, & Chiesa, 1989; Sarno, Buonaguro, & Levita, 1986).

If we add communication impairments accompanying dementia, incidence and prevalence again increases, although estimates vary. There are estimated to be currently 750,000 people with dementia in the UK (1.22% of the population). Dementia affects 10% of the population over 65 years of age, as many as 50% of those over 85 years of age and one third of people over 95 have dementia (Alzheimer's Disease Society, 2010; [www.alzheimers.org.uk](http://www.alzheimers.org.uk)). Alzheimer's disease may affect 5.1 million Americans (National Institute of Health, 2010: <http://www.nia.nih.gov/Alzheimers/Publications/adfact.htm>), 1.56% of the population. To our knowledge, little research has been conducted into the incidence and prevalence of primary progressive aphasia.

While we do not have the figures, we can infer that the prevalence of aphasia in the developed world is probably increasing as survival rates from stroke increase; although the incidence of stroke may be reducing a little because of healthier life-styles, survival of stroke is probably increasing and people are living longer. More people are likely to survive to become chronically disabled, including having aphasia.

On the basis of the stroke data alone, we might conclude that the prevalence of the problem in the developed world ranges between .1–.4%. When other conditions that cause language impairments and disabilities are added, the figures increase.

### **What services are provided for people with aphasia?**

Comparisons are odious, it is said, and rival groups inevitably compete within any nationally provided healthcare system for funds. In the US, for instance, Elman, Ogar, and Elman (2000) reported that diseases receiving disproportionate funding (relative to incidence and prevalence) are the same ones that have among the most vocal advocates: namely AIDS,

breast cancer, diabetes mellitus, and dementia. While we would not deny that these are major disabilities that require significant funds, we can question the fact that services for aphasia and other neurogenic conditions receive less funding (Elman et al., 2000).

Enderby has been involved with a range of colleagues in evaluating and planning the services provided for communication disorders since at least 1986 (Enderby & Phillips, 1986). She was one of the first researchers to address directly the implications of the resource gap in speech-language pathology in the UK. Her two papers "Communication disorders: Planning a service to meet the needs" (Enderby & Davies 1989) and "Speech therapy: Operating a rationed service" (David & Enderby, 1990) demonstrate in their titles a determination to meet the issue head on. She also took an active role in capturing and publishing evidence to substantiate her concerns. A large study in England (Enderby & Petheram, 2000; Petheram & Enderby, 2001) analysed the referrals to 11 speech and language therapy centres from 1987–1995. Over this period 73,758 clients were referred to these centres across England. The caseloads included both adults and children referred for any speech or language treatment, although four sites saw mostly adults and three sites saw mostly children. The cases were broken down into categories such as voice, fluency, aphasia. The data show that there was a significant rise in number of referrals for aphasia from 1987–1995: in 1987 the number was 4,129 and it rose to 11,944 by 1995—an increase of 190.75%. The combined population of the regions of England represented was 1,943,000, so the figures reflect percentage referrals per head of population per year of .32% (1987) to .58% (1995). There seems little doubt, therefore, that the size of the problem is increasing for speech-language pathology departments.

Turning to the neurogenic caseloads of speech-language pathologists, Mackenzie, Le May, Lendrem, McGuirk, Marshall, and Rossiter (1993) conducted a survey of 90% of British National Health Service (NHS) adult speech-language pathology services asking for figures on the aphasic caseload, the services available to them, and the personnel involved in delivering the service. They reported that less than 1 (.94) speech-language pathologist per 100,000 population worked with neurogenic impairments and disabilities. They found that 64% of therapists were able to treat inpatients at least three times per week, and for outpatients this regimen was provided by 25%, but there was wide variation, with some inpatients attending treatment sessions twice daily and others who attended twice weekly. Outpatients were more likely to attend between one and three treatment sessions per week. Fifty-three per cent of responding clinicians were able to continue treatment for longer than a year. The maximum term of treatment for 17% of clinicians was 6 months, and 3 months for 10% of clinicians.

Ten years later, Code and Heron (2003) published the results of a similar survey (conducted in 2000) of 74 speech-language pathology departments providing services for adults in the British NHS. They asked questions about staffing levels, patterns of service delivery at acute and chronic stages, and the time that clinicians spent working with different communication and swallowing problems. The results make interesting comparison with the Mackenzie et al. findings. Compared to Mackenzie et al., Code and Heron's data suggested there had been a doubling of speech-language pathologists working with people with neurogenic communication disorders in the intervening 10 years. A most striking and significant finding was that, on average, speech-language pathologists working with adults spent nearly 53% of their time working with dysphagia, and ~26% of their time working with aphasia, 14% with dysarthria, and 3% with dementia. This suggested that as the percentage of time spent working with swallowing increased, so the percentage of time spent working with aphasia reduced, and correlation analysis bore out this suspicion. Additionally, of the time that speech-language pathologists did spend with aphasic clients, 48% was spent on treatment averaging less than 3 hours per week per individual, and only 4.8% of the speech-language pathologists' time was spent on treatment programs lasting more than 3 hours per week duration.

These figures for the UK are in general agreement with data collected from other English-speaking countries on the services provided for aphasic people. Katz et al. (2000) conducted a large international survey of clinicians providing services for adult neurogenic communication disorders and asked about access, diagnosis, treatment, and discharge patterns of people with aphasia in Australia, Canada, the UK, the US private sector, and services provided by the US Veterans Affairs (US-VA). They found that the average number of treatment sessions for acute patients varied considerably among the different national systems: 1–5 sessions for Australia and the UK, and 16–20 sessions for Canada, the US-Private sector, and the US-VA sector. The average number of treatment sessions for chronically aphasic outpatients varied considerably among systems. There were limitations too on how many treatment sessions a service could provide. Fourteen per cent of all respondents indicated they were limited in the number of sessions they could initially provide, with the US-Private sector providing the largest number (39%), and the US-VA the smallest (3%). The US-Private sector respondents reported that they were allowed a mean of nine sessions, with a range of 1–20 sessions. In the US the insurance company set the majority (58%) of the limits. Ten of eleven respondents replied that these limits resulted in insufficient treatment.

Verna, Davidson, and Rose (2009) extended information for Australia on these issues through a

recent survey of Australian speech-language pathology services for people with aphasia that produced findings from 70 participants. Findings both complemented and contrasted with previous studies. Verna et al. found average levels of intensive treatment in inpatient rehabilitation hospitals of over 4 hours per week, reducing to 2 hours per week in acute inpatient hospitals. For more chronically aphasic people attending community and private services, an average of just over 1 hour's treatment was provided. Interestingly, respondents working in aged-care provided data on the provision of services, where patients were receiving a mean of just over 1 hour per week of treatment. These figures show evidence of relatively better levels of intensity of treatment for many inpatients in rehabilitation hospitals, and a reported tendency for respondents to base their service provision on published research findings and national guidelines (the Australian Clinical Guidelines for Stroke Rehabilitation and Recovery, National Stroke Foundation, 2005).

Work by Enderby and her colleagues made an important contribution to the debate on this issue reported in the paper "Has aphasia therapy been swallowed up?" (Enderby & Petheram, 2002), and results complimented and supported previous findings. The authors abstracted referral data for dysphagia and aphasia from the same large database of 11 health-care providers between 1985–1995 which had recorded details of 73,758 patients referred to speech-language pathology during that decade. They found that in 1987 there were 12 times more aphasic patients referred as there were patients referred for dysphagia. However, in 1995 the position was reversed and twice as many dysphagic compared to aphasic patients were referred to the same services. In 1987, dysphagia accounted for less than 1% of the referrals but it had increased in 1995 to 20% of referrals. They concluded that although aphasia referrals had increased, they represented a lower percentage increase and received less treatment per case than in 1987. The implication of this result is that people with aphasia (that is, a treatable condition) are not being referred for treatment, and, if they are, they are not receiving it. Dysphagia is a serious condition: that is not in question. However, the time and the money spent on the treatment of aphasia have been significantly reduced while that spent on the treatment of dysphagia has significantly increased.

Significant shifts have taken place over the last few decades in the UK: the number of speech-language pathologists working in the population has increased, but less than 50% of the time of the average speech-language pathologist working with adults with neurological damage is spent working with communication disorders. While there has been an increase in the number of speech-language pathologists working in the population in the UK in the last few

decades, they are not working with communication disorders.

Where does this leave us at the close of the first decade of the new millennium? This is no place to review the large number of studies of the efficacy and effectiveness of the treatment that is provided for aphasia—there is disagreement anyway on how effective it is. Greener, Enderby, and Whurr (1999) conducted a Cochrane systematic review of the large randomized control trials (RCT) into the effectiveness of aphasia treatment that had been published up until 1998. Their main finding was that no RCTs met Cochrane's stringent inclusion criteria. This led them to conclude that it was not possible to reach a conclusion about the effectiveness of these treatments on the basis of evidence gathered through RCTs, because none that were suitable had been completed. This review was updated and expanded recently. The authors (Kelly, Brady, & Enderby, 2010) identified an additional 20 studies published between January 1999 and June 2008 and combined the findings from these studies with the 12 trials included in the original review. All studies were RCTs and included a total of 2014 participants. Findings were similar to those reported in the Greener et al. review: there was no evidence either for or against the effectiveness of aphasia treatment, mainly because appropriate studies have not been completed. While systematic reviews are considered to be the most stringent test of a treatment's effectiveness, the finding also highlights the limitations of such an approach. The heterogeneity of the aphasic population is well known, and the case has been often made that attempts to measure a vaguely described 'treatment' for a heterogeneous population is bound to produce vague and inconclusive results. Kelly et al. (2010) acknowledged the difficulties inherent in the RCT research design for evaluating the complex interventions used in the treatment of aphasia: they have been unable to determine whether speech and language therapy post-stroke for aphasia is clearly effective or not. In a recent commentary Professor Sir Michael Rawlins, the Chairman of the UK National Institute for Clinical Excellence (NICE), emphasized that RCTs have limitations and other forms of research design should be utilized and their results taken more into account in clinical decision-making on the effectiveness of treatments and therapies (Rawlins, 2008).

However, there are other approaches. Single case methodology has developed sophisticated meta-analyses as well as systematic reviews (e.g., Robey Schultz, Crawford, & Sinner, 1999; Togher, Schultz, Tate, McDonald, Perdicessm, Smith, et al., 2009; Wisenburn & Mahoney, 2009). A large number of single-case studies have been carried out and meta-analyses (single case equivalent of a systematic review), which have examined effect sizes across studies, demonstrate that aphasia therapy can indeed be effective: "The available

evidence suggests that effect sizes for treatment of aphasia, as indexed by single-subject research are remarkably large" (Robey et al., 1999, p. 468). It may be that the wrong questions have been asked of the large-scale group studies that have already been completed. For instance, Bhogal, Teasell, and Speechley (2003) analysed the changes in mean scores from a selection of these same clinical trials but they also recorded the intensity of therapy in terms of length of therapy, the hours of therapy provided each week, and the total hours of therapy. They found that those studies that showed a significant treatment effect had provided an average of 8.8 hours of therapy per week for 11.2 weeks compared to studies that did not find a significant effect of treatment, which provided only 2 hours per week, but for 22.9 weeks. Studies with a positive outcome had provided an average total of 98.4 hours of therapy, and ineffective studies provided 43.6 hours of therapy. Total length of therapy time provided was significantly correlated with greater improvement. The study concluded that *intensive* therapy over a relatively short amount of time can significantly improve outcomes of speech and language. The surveys reviewed above that have examined the frequency and intensity of treatment in English-speaking countries show that the levels of intensity and frequency provided fall short of what the research indicates is effective for people with aphasia in both acute and more chronic stages. There is evidence for the significant effectiveness of impairment-based treatment for people with chronic aphasia (e.g., Bhogal et al., 2003; Brindley, Copeland, Demain, & Martyn, 1989; see also evidence reported in the recent issue of *Seminars in Speech and Language*, edited by Code, 2010, on impairment-based treatment for chronic aphasia).

A range of professional associations, aphasia charities, and lobbying organizations in the US, Australia, Canada, and the UK have produced position papers and best practice guidelines on aphasia and its management, and the interested reader is directed to their useful web resources (<http://www.asha.org>; <http://www.aphasia.org>; <http://www.speechpathologyaustralia.org.au/>; <http://www.caslpa.ca>; <http://www.rcslt.org/>; <http://www.psycbite.com/>).

### Closing the gap

We appear to be a long way off providing what the research, the speech-language pathology profession, and the various national aphasia associations suggests is the appropriate amount of treatment to maximize the communicative potential of aphasic people in our communities. The reasons for this under-provision are unlikely to change in any foreseeable circumstances. Enderby recognized this very early on and, since the 1980s, has actively researched ways to address this problem, mainly by

harnessing non-traditional resources, such as the application of computer-based provision and the utilization of assistants and volunteers, but also in providing evidence-based ammunition for those who are seeking to make a case for improving services for people with aphasia.

Understandably the vast majority of treatment and therapy for people with aphasia has been delivered in clinical sessions by qualified speech-language pathologists. This is expensive in resource terms and the findings of the research reviewed above (e.g., Code & Heron, 2003; Enderby & Petheram, 2002; Katz et al., 2000; Verna et al., 2006) indicate many people with aphasia will be unlikely to receive more than 9 hours clinical contact in total. This will include assessment, counseling, and other therapy-related activities. It is now widely accepted that even in the elderly, forming the majority of the population with aphasia, neuroplasticity can enable new learning (e.g., Musso, Weiller, Kiebel, Muller, Bulau, & Rijntjes, 1999; Pulvermuller & Berthier, 2008) given sufficient targeted stimulation. The challenge is to achieve the necessary amount of stimulation within the available resources. Looking over the arc of Enderby's work in this area, an overarching strategy can be discerned: therapists are seen as a scarce and valuable resource who need to be deployed to the maximum effect and that more routine "drill and practice" tasks can be adequately performed using other less-limited resources; even to the extent of enabling people with aphasia to take an active role in their own treatment.

David and Enderby's (1982) paper, subtitled "Treatment of acquired aphasia: Speech therapists and volunteers compared", set the agenda in that not only did it directly address the issue of enrolling alternative resources but it also signalled Enderby's willingness to take controversial positions that could be seen as challenging accepted wisdom and vested interests. She was also one of the first people in the field, certainly in the UK, to recognize the potential of computers and communication technology to make a contribution to treatment and therapy (e.g., Enderby, 1987; Sunderland, Curry, Das, Enderby, Kinsey, Mortley, et al., 1992). Her earliest contribution was the Hospital Services Time Management System (HSTMS), which was essentially a clinical service management system but potentially enabled existing resources to be more efficiently deployed. This system captured the raw data that were used as the basis for the large-scale analysis of referrals cited above. Her focus soon moved to using computers to directly provide treatment and her vision of the therapist as primarily a strategist directing and deploying a range of resources in addition to her/his own efforts led to a focus on using the computer to provide supplementary treatment in the home. Therapists have always provided paper-based "homework" tasks to be completed between sessions, but the very nature

of the medium means that there are inbuilt limitations in their value; they are time-consuming to prepare, especially if they are targeted on a particular linguistic issue; each task can only be done once in the homework period; there is no way of giving guidance or effectively coping with errors; and feedback is only given long after the task is completed. All of these problems can be solved by a well designed computer-based treatment system and Enderby secured the resources and directed the program of work at the Frenchay Speech and Language Therapy Research Unit that addressed these issues, and continues to do so. Indeed she initially founded the Frenchay Unit for this specific purpose, although its remit is now much broader. This resulted in systems such as the Homework System (Petheram, 1996), INTACT (Mortley, Simmons, Petheram, Cotton, & Enderby, 1996), and exploring the use of the internet as a means of delivering treatment (Mortley, Wade, Davies, & Enderby, 2003). In addition to treatment systems she also recognized the potential of information technology to improve the lives of people living with aphasia—a good example of this is the use of voice recognition as an aid to writing (Wade, Petheram, & Cain, 2001).

Although Enderby has taken a leading role in engaging additional resources in aphasia therapy, this has not been at the expense of the recognition of the crucial role of the professional therapist and the need to maintain and ideally improve the time they can devote to aphasia therapy. In common with many other countries, healthcare in the UK has been increasingly "marketized" over the past 20 years or so. The pressures of an increasing and ageing population and numerous advances in effective healthcare have led to a more open acknowledgement that all needs cannot be met and that some form of rationing in the allocation of resources to different needs is required. Politicians have largely tried to avoid responsibility for taking such decisions by using a market-based system to match demand and supply. As discussed above, people with aphasia are unlikely to be naturally at the front of the queue for resources, and are further disadvantaged by the inherent difficulties of measuring outcomes in aphasia therapy (outcomes being the "currency" of healthcare markets). Not only are "cures" unlikely, but even significant progress is hard to measure. In addition, much therapy is directed at enabling the person to live a more fulfilling life with a communication impairment, as well as alleviating the impairment *per se*. Enderby quickly recognized the danger for all the rehabilitation professions and led the development of the Therapy Outcome Measure (TOM—Enderby & John, 1997; see John, 2011 for full discussion of the TOMS), which offers a cogent and comprehensive tool for therapists to represent the contribution of their work to healthcare commissioners, amongst others.

## Conclusion

We have argued above that it is unlikely that there will ever be sufficient resources available to deliver all the services from which people with aphasia may benefit. However, there are strategies that can do much to address the problem. Enderby's work can be seen as offering a blueprint for a comprehensive approach to this issue. The first steps are to identify the extent of the problem and make sure all those in need are recognized. There is also a need for an accurate picture of the resources currently deployed and the trends in provision over time. Having identified the extent of the problem, currently available resources need to be deployed to their maximum effectiveness, cogent arguments marshalled for maintaining and even increasing those resources in a competitive healthcare environment, and additional non-traditional resources need to be enrolled to supplement the existing provision. As we have tried to show above, Enderby has made a leading contribution in all these areas.

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