

'Doing things differently'—working towards distributed responsibility within memory assessment services

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Objectives: To compare initial diagnostic hypotheses made by Allied Health Professionals (AHP) (mental health nurses, occupational therapists and social workers) with subsequent formal multidisciplinary formulation based upon the full possession of investigations, neuropsychological tests and brain imaging. Design Prospective analysis.

Design: Prospective analysis.

Setting: Home-based assessments, secondary care based multidisciplinary memory clinic.

Participants: 90 consecutive referrals over a 3-month period.

Results: Fifty eight patients (64.4%) were diagnosed by the multi-disciplinary team as having a dementia. Twenty (34%) were classified as Alzheimer's disease, 28 (49%) of mixed sub-type and 9 (16%) of vascular origin. Together, AHP's were able to detect dementia with 91% accuracy (Kappa 0.81) sensitivity was 0.88 and specificity 0.97. The diagnostic accuracy for each professional group ranged from 88% to 93% (Kappa 74–90%).

Conclusions: In this study, structured initial assessment by AHP's working in a Memory Assessment Service was shown to be an accurate method of determining a diagnosis of cognitive impairment, when compared with formal MDT judgment. It is suggested that such distributed responsibility affords a viable option for the future detection of early dementia. Copyright © 2011 John Wiley & Sons, Ltd.

Key words: dementia; memory services; distributed responsibility; diagnosis; assessment

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Introduction

Over the past 25 years, the number of people in the UK aged over 65 years has grown by 1.5 million to represent 16% of the general population; by 2033, this will have increased to 23%. The most evident change will be amongst the 'very old'—those aged at least 85 years—of whom there were 600 000 in 1983 but will number 3.2 million by 2033 (Office for National Statistics, 2009). Consequent on this change, the number of those who develop dementia will correspondingly increase from the current 700 000 to one million by 2025 and 1.6 million by 2050 (Alzheimer's Society, 2007).

With these challenges to be faced, it is notable that current access to a diagnosis of dementia is inadequate: time taken to diagnosis is longer in comparison with most of our European neighbours (National Audit Office, 2007), most people with dementia are never diagnosed (Alzheimer's Society, 2009) and the overall encounter is cited as being a 'long, protracted and at times distressing experience' (Alzheimer's Society, 2009, p. 8). These inadequacies have occurred despite the steady growth and development of the Memory Services movement across the UK.

Memory Services have historically been promoted as quality services that offer a stigma-free alternative

to the more traditional Old Age Psychiatry teams. Their functions and common aspects have been thoroughly identified by others (Luce *et al.*, 2001; Lindsay *et al.*, 2002). Such services are usually for people with mild dementia; a detailed assessment is conducted, a diagnosis is made, and appropriate treatments are initiated and monitored. Memory Services attract people who are younger and have very early stages of a dementia—on average 2 years earlier than those seen in traditional services (Luce *et al.*, 2001).

The first audit of Memory Services across the UK found 20 services, almost all of which were multi-disciplinary, hospital based and linked to programmes of research (Wright and Lindsay, 1995). When the survey was repeated (Lindsay *et al.*, 2002) a significant growth in service provision as a consequence of the introduction of cholinesterase inhibitors was reported, and whilst the service model had changed, becoming smaller and less academically focused, the same range of functions was still being offered.

Even taking these developments into account, it is recognised that dementia care provision fails to meet the needs of people with dementia and their families, and arguably, current models cannot hope to cope effectively with future demands and expectations. That there needs to be change to confront both demographic challenges and service inadequacies is now accepted. In response, we are seeing the pragmatic repositioning of dementia and dementia care within society with closer attention being focussed at the type of change that is required.

Arising from this increased interest in dementia is a positive opportunity to bring about effective changes to the way in which Memory Services are configured and how they go about the business of assessment and diagnosis.

Behind this lies a policy agenda oriented around the early detection of, and intervention for, dementia, principal drivers for which have been standard seven of the National Service Framework for Older People (Department of Health, 2001), the service development guide 'Everybody's Business' (CSIP, 2005) and the 2006 guidance from the National Institute for Health and Clinical Excellence and the Social Care Institute for Excellence (NICE/SCIE, 2006) aimed at improving the care of people with dementia.

National Dementia Strategies and draft plans from across the UK build upon this agenda (Department of Health, 2009; The Scottish Government, 2010; The Welsh Assembly Government, 2010). Each strategy or action plan resonates with simple yet powerful messages that highlight the current inadequacies and place emphasis upon changing practice and doing

things differently so as to better engage with people with dementia.

Well before these messages, 'Everybody's Business' had, not only, proposed schemas for the kind of services that needed to be commissioned and developed but stated that there had to be a cultural shift in the way that services should be internally configured (CSIP, 2005). The argument made was simple; if there are to be more people with dementia, then it follows there will be increased demands placed on services and, in particular, upon old age psychiatrists who will see a substantial increase in workload. The solution is seen not in having more old age psychiatrists but in easing their workload by distributing responsibilities more evenly and effectively throughout teams.

Doing things differently

In earlier work, we reported that experienced Memory Service nurses can assume greater responsibilities for clinical assessment, generating correct hypotheses regarding the diagnosis of dementia and implementing a dementia care pathway at an earlier point (Page *et al.*, 2008). We found that the nurses, after completion of a standardised assessment package, were able to detect dementia with 94% accuracy (kappa was 0.88); sensitivity was 92%, and specificity was 96%. When compared with later formal diagnosis by the consultant-led multi-disciplinary team (MDT), the level of agreement was 0.88, an 'almost perfect' degree of agreement beyond chance (Maclure and Willett, 1987).

Based on these outcomes, we posed the argument that empowering others in the team to assume greater responsibility in the assessment and diagnostic process could significantly increase the quality, scope and throughput of work within a Memory Service. Clients most likely to have dementia could be identified at a very early point in the assessment process and further investigations commenced immediately without awaiting the formal approval of the consultant. We drew short of challenging the role of the consultant in formal diagnosis making and accepted that such authority is most appropriately retained by that professional. We did question whether the assessment framework could be adopted by other memory services or a broader range of disciplines and similar positive outcomes be achieved.

We have since shown that the assessment framework can be embedded in a newly established Memory Assessment Service and that a range of professional disciplines—nurses, social workers and occupational therapists—can be effectively trained in its application

(Page *et al.*, 2010). Results showed that 95% of those trained found that their knowledge of dementia had increased, and 75% reported increased confidence around assessment skills. All had a clearer understanding of their role and of what was expected of them.

Three months after the phase I training, returning trainees reported that the assessment framework had been integrated with ease. They highlighted additional benefits related to having a structure to the assessment and the generation of clinical information that was regarded as being increasingly relevant and focussed. Clients on the receiving end of the assessment reported satisfaction and a feeling that their concerns were being taken seriously; they approved of this new way of working.

In this paper, we report on the outcomes, in respect to generating hypotheses about diagnosis, amongst those team members who had recently undergone a comprehensive training course in the assessment framework.

Methodology

Following receipt of ethical and organisational approval, we undertook a prospective analysis of 90 consecutive referrals seen by nine members of a newly established Memory Assessment Service, all of whom had undergone the training programme. Team members comprised four mental health nurses, three occupational therapists and two social workers. A data-extraction sheet was utilised, and data were collected on the first 10 clients seen by each team member following completion of the training programme.

Emphasis was placed on two assessment tools—the Mini-Mental State Examination (MMSE) (Folstein *et al.*, 1975) and the Kendrick Object Learning Test (KOLT) (Kendrick, 1985)—that had been shown by earlier multivariate logistic regression modelling to show considerable power in predicting a correct diagnosis (Page *et al.*, 2008).

Data collected included professional discipline of the team member making the diagnosis, demographics of client by age and gender, MMSE score, KOLT score, initial and subsequent MDT primary diagnosis and, in the case of dementia, the specific illness causing the dementia.

Team members' diagnoses were compared with subsequent formal diagnoses made by the consultant-led MDT. Collected data were subject to analysis, using SPSS version 13, IBM (International Business Machines) Somers, New York, USA, by an independent researcher based at the University of Manchester.

Diagnostic accuracy was analysed for the team members as a group and sub-analysed by discipline.

Results

Data were available on all 90 referrals (Table 1). Forty of the 90 referrals (44.4%) were seen by a nurse, 30 (33.3%) by an occupational therapist and 20 (22.2%) by a social worker. Multivariate logistic modelling revealed significant and independent differences in the characteristics of the referrals seen by each professional group. Compared with occupational therapists, social workers were significantly more likely to receive male referrals (odds ratios [OR] = 8.08, 95% confidence intervals [95% CI] = 1.78–36.74, $p < 0.01$). Nurses were also significantly more likely than occupational therapists to receive male referrals (OR = 4.35, 95% CI = 1.12–16.94, $p = 0.034$) and significantly more likely to screen patients with lower KOLT scores (OR = 1.10, 95% CI = 1.01–1.21, $p = 0.030$). No significant differences between nurse and social worker referrals were observed.

Of the 90 referrals included in the study, 58 (64.4%) were diagnosed by the MDT as having dementia. Twenty of these (34%) were classified as Alzheimer's disease; 28 (49%) of mixed sub-type, nine (16%) of vascular origin and one (2%) as another dementia sub-type classification (Table 2). Together, nursing and allied health professionals (AHP) detected dementia with 91% (kappa 81%) accuracy. Sensitivity and specificity were 0.88 and 0.97, respectively. Overall, AHP–MDT agreement for dementia sub-diagnoses ranged from 87% to 96% (kappa 0.67–0.77).

The diagnostic accuracy of each professional group ranged from 88% to 93% (kappa 74–90%). Sensitivity ranged from 0.81 to 0.95 and specificity from 0.90 to 1.00 (Table 3).

The characteristics of those receiving and not receiving a correct (MDT-defined) dementia diagnosis were examined using logistic regression to obtain ORs with 95% CI for each potential predictor variable. Multivariate logistic regression was used to derive a final set of characteristics independently associated with a dementia diagnosis.

Table 1 Client characteristics

Characteristics	<i>n</i>	Values
Mean (SD) age (years)	90	76.28 (8.14)
Gender (n, % male)	90	36 (40.0)
Mean (SD) MMSE	89	22.27 (4.56)
Mean (SD) KOLT	85	19.96 (9.18)

Table 2 Diagnostic accuracy for dementia

	Prevalence <i>n</i> (%)		% accuracy (kappa)	Positive predictive value (PPV)	Negative predictive value (NPV)	Sensitivity	Specificity	False negative	False positive
	MDT	AHP							
Dementia	58 (64.4)	52 (57.8)	91 (0.81)	0.98	0.82	0.88	0.97	0.12	0.03
Alzheimer's disease (AD)	20 (22.2)	19 (21.1)	92 (0.77)	0.85	0.94	0.80	0.96	0.20	0.04
Mixed	28 (31.1)	22 (24.4)	87 (0.67)	0.75	0.93	0.86	0.87	0.14	0.13
Vascular	9 (10.0)	9 (10.0)	96 (0.75)	0.81	0.98	0.78	0.98	0.22	0.02
Other	1 (1.1)								
No impairment	2 (2.2)	1 (1.1)	99 (0.66)						
Depression	2 (2.2)	2 (2.2)	100 (1.0)						
Mild Cognitive Impairment (MCI)	23 (25.6)	31 (34.4)	89 (0.74)						
Other	5 (5.6)	4 (4.4)	99 (0.88)						

Table 3 Diagnostic accuracy for dementia

	Prevalence <i>n</i> (%)		% accuracy (kappa)	Positive predictive value (PPV)	Negative predictive value (NPV)	Sensitivity	Specificity	False negative	False positive
	MDT	AHP							
All	58 (64.4)	52 (57.8)	91 (0.81)	0.98	0.82	0.88	0.97	0.12	0.03
Nurse (<i>n</i> = 40)	27 (67.5)	22 (55.0)	88 (0.74)	1.0	0.72	0.81	1.0	0.19	0.00
Social worker (<i>n</i> = 20)	11 (55.0)	10 (50.0)	95 (0.90)	1.0	0.90	0.91	1.0	0.09	0.00
Occupational therapist (<i>n</i> = 30)	20 (66.6)	20 (66.6)	93 (0.85)	0.95	0.90	0.95	0.90	0.05	0.10

Multivariate logistic regressions were performed to derive a final set of patient characteristics independently associated with a correct dementia diagnosis. Predictor characteristics were retained in the model if they were significant at the 0.05 level. To take potential measurement bias into account, assessor type was included in the multivariate model.

Analyses for MDT dementia diagnoses showed dementia patients to be older, less likely to be male and less likely to score higher on MMSE and KOLT screening tests (Table 4). The full and final multivariate models for MDT dementia diagnoses are also shown in Table 4. These models show a dementia diagnosis to be independently associated with lower scores on the MMSE. The independent effect of age remains marginally significant at the 0.05 level.

Discussion

There were some differences between the original study reporting outcomes in Manchester (Page *et al.*, 2008) and this study around a new service in Wigan.

Accepting these differences, the most significant outcome from this study is that all professionals involved showed high levels of accuracy in their ability to formulate correct hypotheses regarding the presence of a dementia syndrome. Whilst there were minor, non-significant differences between each professional group, they achieved a combined accuracy rate of 91% (kappa 0.81), and each group achieved an almost perfect degree of agreement, beyond chance, with the consultant-led MDT.

It is therefore posited that a variety of professionals working in Memory Services can be effectively trained and supported to undertake a comprehensive assessment culminating in an early and correct diagnostic hypothesis. By doing so, the consultant leading the team can distribute appropriate responsibility with a level of confidence hitherto not appreciated. Given the increasing demands placed upon consultant psychiatrists, this may be an attractive outcome as it provides an option to focus their advanced knowledge away from the routine. Additionally, the MDT is supported to function in a way that utilises the experience and

Table 4 Referral characteristics as potential predictors of a correct MDT dementia diagnosis; univariate and multivariate analyses

	<i>n</i>	OR	95% CI		<i>p</i> -value
			Lower	Upper	
Univariate analyses					
Age	90	1.07	1.01	1.13	0.029
Gender	90	0.28	0.12	0.70	0.006
MMSE score	89	0.56	0.44	0.72	0.000
KOLT score	85	0.86	0.80	0.93	
Complete multivariate model					
OT	85	REF			0.279
Nurse		0.263	0.049	1.418	0.120
Social worker		0.616	0.084	4.524	0.634
Age		1.087	0.989	1.195	0.083
Gender		1.238	0.283	5.424	0.777
MMSE score		0.569	0.409	0.791	0.001
KOLT score		0.962	0.875	1.057	0.418
Final predictor model					
OT	85	0.354	0.081	1.548	0.357
Nurse		0.828	0.139	4.940	0.168
Social worker		1.096	1.000	1.201	0.836
Age		0.536	0.404	0.711	0.051
MMSE score					0.000

skills of its members who have themselves reported benefit from doing things differently.

Importantly, the decision-making process of the team as a whole is enhanced by the requirement that each member presents focused, standardised assessment data as a necessary prerequisite to formal diagnosis. This has the potential to be a more responsive process that may lead to the client receiving an earlier diagnosis which clearly would go some way to redressing the previously cited 'long, protracted and at times distressing experience' (Alzheimer's Society, 2009, p. 8).

Opportunities for greater continuity of care are apparent with the potential to utilise the relationship established through the enhanced assessment role for subsequent information giving, including disclosure of diagnosis by the professional who had made the initial contact. Further expanding the availability of non-medical prescribing could add extra value to a new way of working. This could mean that the role of the consultant in respect to the management of early, uncomplicated dementia becomes one of developing, advising and supporting the team.

People reporting cognitive impairment have reported their satisfaction with this process, and there would be added benefit for the client from a clearly identifiable named professional accompanying him or her through this period of contact with specialist Memory Services.

Conclusions

The potential for distributed responsibility across memory assessment services is reinforced by the findings of this study. The utilisation of a tried and tested assessment framework was found to be successfully adopted by others and was an effective tool in the diagnostic process. Positive outcomes for medical staff, allied health professionals and service users are evident. We are therefore led to propose that memory services that are in pursuit of new ways of working and who are encouraged to 'do things differently' could consider whether there are potential generic working opportunities available to them.

Key points

- AHP's working in a Memory Assessment Service can assume a greater level of responsibility for the assessment and diagnosis of dementia.
- A tried and tested assessment framework can be adopted and utilised to good effect in the diagnostic process.
- There is less evidence that AHP's can make accurate diagnoses of sub-types of dementia and this higher level of specialism should continue to be the responsibility of a consultant psychiatrist led MDT.

Conflict of interest

None declared.

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