Use of cognitive screening instruments in primary care: the impact of national dementia directives (NICE/SCIE, National Dementia Strategy)

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Background. Publication of national dementia directives, namely the National Institute for Health and Clinical Excellence/Social Care Institute for Excellence (NICE/SCIE) guidelines (2006) and the National Dementia Strategy (NDS; 2009), has aimed to improve dementia awareness, diagnosis and management in all sectors of the health service.

Aim. To measure the frequency of cognitive screening instrument use reported in referrals from primary care to a dedicated secondary care Cognitive Function Clinic (CFC) over the period encompassing the launch of NICE/SCIE guidance and NDS, in comparison with cohorts seen before these directives were issued. The design of study is prospective. The setting of the study is CFC, Regional Neuroscience Centre.

Method. Over a 2 year period (February 2008 to February 2010), referral letters for patients referred from primary care to CFC (n = 306) were examined for mention of cognitive screening instrument use. Patients were evaluated in CFC with standard clinical, neuropsychological and neuroimaging methods and diagnoses were made following widely accepted diagnostic criteria for dementia and dementia subtypes.

Results. There was an increase in the number of GP referrals over the study period compared to a prior cohort but the proportion of dementia diagnoses fell and the frequency of cognitive screening instrument use was unchanged.

Conclusions. Increased numbers of referrals would be consistent with an awareness raising effect of NICE/SCIE and NDS and a willingness among GPs to refer cases. But the falling proportion of dementia diagnoses suggests that these are ‘worried well’ individuals. There is no evidence for closure of the dementia ‘diagnosis gap’.

Keywords. Dementia, diagnosis, National Dementia Strategy, NICE/SCIE, primary care, screening.

Introduction

The growing importance of dementia diagnosis has been reflected in recent times by the publication in the UK of guidelines from the National Institute for Health and Clinical Excellence/Social Care Institute for Excellence (NICE/SCIE) in November 2006 and the National Dementia Strategy (NDS) in February 2009. These documents emphasized the importance of early case identification, wherein primary care physicians have a key role, prior to onwards referral to dedicated dementia services, in the hope of narrowing or closing the ‘diagnosis gap’, i.e. too few people being diagnosed with dementia or diagnosed early enough. A report from the National Audit Office (NAO) in January 2010 found that primary care physicians were becoming more positive about diagnosing dementia early, perhaps related to the inclusion of dementia as one of the chronic conditions meriting special attention in the Quality and Outcomes Framework (QOF) of the UK GP contract.

In support of the NDS, the Department of Health and the Alzheimer’s Society issued ‘Understanding dementia. A resource pack for GPs and patients’ containing information about dementia diagnosis and management. It recommended use of the Mini-Mental State Examination (MMSE) and the abbreviated mental test score (AMTS) as cognitive screening instruments (see Box 1 for brief details of these and other tests). NICE/SCIE (section 1.4.1.3) mentioned...
Use of cognitive screening instruments in primary care

The six-item cognitive impairment test (6CIT), the General Practitioner Assessment of Cognition (GPCog), the seven-minute screen, in addition to the MMSE use, have psychometric properties similar to the MMSE for dementia screening. Other studies of the quality of GP referrals to dementia clinics have found a similar low frequency of case identification, including those specifically designed for use in the primary care setting. Fisher and Larner previously examined whether any change occurred in the frequency of non-dementia diagnoses in patients referred to CFC from primary care before and after the initial QOF introduction (April 2006) and found no difference.

Both the aforementioned studies from CFC effectively predated the awareness raising pronouncements of NICE/SCIE and NDS, both of which have been followed by an increase in referral rate to CFC. As in the previous study, referral letters from primary care, but with no accompanying increase in the number of new diagnoses of dementia, one of the principal aims of the NDS. The aim of this study was therefore to measure the frequency of cognitive screening instrument use reported in referrals from primary care to CFC over the period encompassing the launch of NICE/SCIE guidance and NDS in comparison with cohorts seen before these directives were issued.

Method

As in the previous study, referral letters from primary care physicians to the CFC were examined for explicit information about the use of named cognitive screening instruments for patient assessment prior to referral. In addition, mention of instruments used to diagnose depression was also recorded.

The initial study covered a 2 year period (October 2004 to September 2006 inclusive), to match a prior study (September 2002 to August 2004 inclusive), so this was further matched by looking at another 2 year cohort (February 2008 to February 2010), which has already been examined to assess the impact of the NDS on referral practice. By subdividing this new

Box 1 Selected cognitive screening instruments

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Description</th>
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<tbody>
<tr>
<td>MMSE</td>
<td>Well-established, brief (ca. 10 minutes), 30-point questionnaire sampling various cognitive domains (orientation, attention, memory, language and visuoconstructional abilities); excellent specificity for dementia diagnosis and sensitivity less good.</td>
</tr>
<tr>
<td>AMTS</td>
<td>Well-established, brief (ca. 5 minutes), 10-question screen sampling various cognitive domains.</td>
</tr>
<tr>
<td>6CIT</td>
<td>Relatively new, brief (ca. 5 minutes), nine-item cognitive screening instrument sampling various cognitive domains specifically designed for use in the primary care setting.</td>
</tr>
<tr>
<td>GPCOG</td>
<td>Relatively new, brief (ca. 5 minutes), six-item cognitive screening instrument sampling various cognitive domains specifically designed for use in the primary care setting.</td>
</tr>
<tr>
<td>7-MS</td>
<td>Relatively new, brief (ca. 7 minutes), battery of four tests sampling various cognitive domains (orientation, memory, clock drawing and verbal fluency).</td>
</tr>
<tr>
<td>Mini-Cognitive Assessment Instrument (Mini-Cog)</td>
<td>Relatively new, very brief (ca. 3–5 minutes), screening test assessing only two aspects of cognition, namely short-term recall and clock drawing. Specifically designed for use in the primary care setting.</td>
</tr>
<tr>
<td>MIS</td>
<td>Relatively new, very brief (ca. 4 minutes), single domain (memory) assessment test: four-item delayed free and cued recall.</td>
</tr>
</tbody>
</table>

Box 2 Selected depression screening instruments

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHQ-9</td>
<td>Relatively new nine symptom depression checklist, clinician administered and validated for measurement of depression severity.</td>
</tr>
<tr>
<td>HADS</td>
<td>Well-established, 14 item (7 depression and 7 anxiety) questionnaire, in which patients are asked to choose one response from the four given options.</td>
</tr>
<tr>
<td>Beck Depression Inventory (BDI)</td>
<td>Well-established, 21-question multiple choice self-rating depression scale.</td>
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</table>

The initial study covered a 2 year period (October 2004 to September 2006 inclusive), to match a prior study (September 2002 to August 2004 inclusive), so this was further matched by looking at another 2 year cohort (February 2008 to February 2010), which has already been examined to assess the impact of the NDS on referral practice. By subdividing this new.
cohort, this effectively gave us three cohorts with respect to national directives relevant to dementia:

- Pre-NICE/SCIE: October 2004 to September 2006,
- Post-NICE/SCIE, pre-NDS: February 2008 to February 2009,

Patients were assessed in CFC and diagnoses made using standard clinical diagnostic criteria for dementia (DSM-IV) and dementia subtype, based on clinical interview, informant interview (where possible), bedside and formal neuropsychology testing and neuroimaging, as previously reported in this clinic.24 Standard statistical methods (chi-square test) were used to examine the null hypotheses that proportions were the same in the two cohorts being compared (equivalence hypothesis) with $P < 0.05$ considered significant for rejection of the null hypothesis.25

Results

There was a large (51.6%) increase in referral numbers comparing the first (October 2004 to September 2006) and second (February 2008 to February 2010) 2 year cohorts (231 versus 477), referrals from primary care accounting for much of this increase (123/231, 53.2% versus 306/477, 64.2%; Table 1). The null hypothesis that the proportion of new referrals from primary care was the same in the two cohorts was rejected (chi-square = 7.78, df = 1, $P < 0.01$).

There was an overall fall in the proportion of patients receiving dementia diagnoses (117/231, 50.6% versus 149/477, 31.2%), which was statistically significant (chi-square = 24.6, df = 1, $P < 0.001$). In primary care referrals, the proportion of dementia diagnoses also fell (45/123, 36.6% versus 70/306, 22.9%), and this was also statistically significant (chi-square = 8.36, df = 1, $P < 0.01$).

Cognitive screening instrument use referred to in referral letters from primary care was increased (Table 2; 25/123, 20.3% versus 81/306, 26.5%) but this did not permit rejection of the null hypothesis (chi-square = 1.54, df = 1, $P > 0.1$).

Examining the 12 months before and after NDS launch, it was previously reported that there was a 12.0% increase in new referrals seen in the second time period (225 versus 252), with a significant increase in the percentage of referrals coming from primary care (131/225, 58.2% versus 175/252, 70.2%; chi-square = 6.18,

### Table 1 Referral numbers, sources and diagnoses before and after NICE/SCIE and NDS launch

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<tbody>
<tr>
<td>New referrals seen</td>
<td>183</td>
<td>231</td>
<td>225</td>
<td>252</td>
</tr>
<tr>
<td>Dementia (prevalence in cohort)</td>
<td>90 (49.2)</td>
<td>117 (50.6)</td>
<td>74 (32.9)</td>
<td>75 (29.8)</td>
</tr>
<tr>
<td>New referrals from primary care (% of total new referrals)</td>
<td>90 (49.2)</td>
<td>123 (53.2)</td>
<td>131 (58.2)</td>
<td>175 (70.2)</td>
</tr>
<tr>
<td>Primary care referrals with new diagnosis of dementia (% primary care referrals)</td>
<td>36 (40.0)</td>
<td>45 (36.6)</td>
<td>28 (21.3)</td>
<td>42 (24.0)</td>
</tr>
</tbody>
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### Table 2 Cognitive test instruments reported in primary care referrals

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<tbody>
<tr>
<td>N</td>
<td>123</td>
<td>131</td>
<td>175</td>
</tr>
<tr>
<td>Any instrument used (%)</td>
<td>25 (20.3)</td>
<td>34 (25.9)</td>
<td>47 (26.8)</td>
</tr>
<tr>
<td>Cognitive tests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMSE</td>
<td>17</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td>AMTS</td>
<td>6</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Clock test</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6CIT</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>GPCog</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Uninterpretable</td>
<td>0</td>
<td>1</td>
<td>6 (NB: 2 tests reported in 2 patients)</td>
</tr>
<tr>
<td>Other tests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HADS</td>
<td>Not examined</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>PHQ-9</td>
<td>Not examined</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
df = 1, P < 0.02). There was a small decrease in the overall percentage of patients receiving a diagnosis of dementia (pre-NDS = 74/225, 32.9% versus post-NDS = 75/252, 29.8%) but this did not reach statistical significance (chi-square = 0.63, df = 1, P > 0.1). For patients referred from primary care, the percentage of patients receiving a diagnosis of dementia increased (28/131, 21.3% versus 42/175, 24%; Table 1) but not significantly (chi-square = 0.30, df = 1, P > 0.5).

Regarding cognitive test use in primary care referrals (Table 2), there was a small increase in reported use (34/131, 25.9% versus 47/175, 26.8%), which did not reach statistical significance (chi-square = 0.07, df = 1, P > 0.5).

The cognitive screening instruments reportedly used in primary care were largely the MMSE and AMTS, as in the previous study, accounting for >90% of reported tests both before and after NICE/SCIE (23/25, 92.0% versus 73/81, 90.1%). The latter figure may indeed be an underestimate since in some cases (six), it was clear that cognitive screening tests had been performed but the information vouched for in the referral letter was deemed uninterpretable (e.g. ‘MMSE 8/10’; ‘Mental assessment score 8/30’ in a patient whose CFC MMSE was 20/30). In another six patients in the 2009–10 cohort, MMSE or AMTS was reportedly done but no score given in the referral letter. In only a single case in the whole 2008–10 cohort did the GP send the actual MMSE along with the referral letter. Two patients had two scales reported (MMSE and 6CIT and MMSE and GPCog). Use of depression scales (PHQ-9 and HADS) was extremely rarely reported in referral letters (Table 2).

**Discussion**

These data indicate increased numbers of referrals from primary care to a dedicated CFC over time. Whether this is due to the awareness-raising effects of the NICE/SCIE and NDS directives or is simply a reflection of the general year-on-year increase in referrals to neurology clinics cannot be determined (subsequence is not necessarily consequence).

Many of the extra referrals came from primary care physicians. In these referral letters, there was evidence of a non-significant increase in the use of cognitive screening instruments. MMSE and AMTS were the cognitive screening tests most frequently mentioned, which may reflect their recommendation in ‘Understanding dementia. A resource pack for GPs and patients’. Other, briefer, screening tests deemed suitable for use in primary care have apparently made little headway against the more established tests, likewise the DemTect, which attempts to correct for age and education, has guidance on the meaning of test scores, suggests action to be taken and therefore might be of particular value in the primary care setting. It is too early to anticipate what impact self-administered patient tests such as the Test Your Memory (TYM) test might have in primary care.

While the increased number of referrals from primary care might be an encouraging indication of GP interest in dementia diagnosis, corroborating NAO findings, there is no evidence as yet for a narrowing of the dementia diagnosis gap since there was no increase (indeed a fall) in the proportion of dementia diagnoses. Perhaps part of the reason for this observation may be a failure to address the possible differential diagnosis of depression. The very low frequency of reports of use of depression scales (PHQ-9 and HADS) may help to explain the previously observed lack of change in non-dementia referrals to CFC from primary care following introduction of QOF depression indicators. Certainly, PHQ-9 has proved of pragmatic use in identifying patients with depression in CFC.

How might the failure to close the diagnosis gap be improved? Increased GP knowledge of and training in cognition assessment might be desirable. The NAO survey suggested that GP knowledge of dementia remained consistent, but had not improved, over the 2004–09 period. Perhaps, emphasizing use of some of the brief cognitive and depression screening instruments specifically designed or recommended for use in primary care might therefore be of assistance. This might be delivered through educational interventions such as decision support software and practice-based workshops or through the medium of e-learning for example using modules developed by the Royal College of General Practitioners (e-Learning for General Practice, Module 9, Memory Problems in Older People; www.e-lfh.org.uk/projects/egp/index.html). A different approach might be the further development of a model of dementia care based in primary care and eschewing referral to secondary care, which seems to require the use of very little in the way of cognitive and depression screening instrument use (Clock drawing; Brief Assessment Schedule Depression Card).

In summary, CFC has received more referrals from primary care since the publication of national dementia directives, but a fall in the proportion of dementia diagnoses, and static cognitive screening instrument use. Thus, there is currently no evidence of an impact of national directives in increasing dementia diagnosis, although this may change as NDS implementation is rolled out over the coming years.

**Declaration**

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Conflict of interest: none.
References


