

Dementia

Costing report

Implementing NICE SCIE
guidance in England

November 2006

NICE clinical guideline 042



This costing report accompanies the clinical guideline: 'Dementia' (available online at www.nice.org.uk/CG042).

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This guidance is written in the following context

This report represents the view of NICE and SCIE, which was arrived at after careful consideration of the available data and through consulting health and social care professionals. It should be read in conjunction with the NICE-SCIE guideline. The report and templates are implementation tools and focus on those areas that were considered to have significant impact on resource utilisation.

The cost and activity assessments in the reports are estimates based on a number of assumptions. They provide an indication of the likely impact of the principal recommendations and are not absolute figures. Assumptions used in the report are based on assessment of the national average. Local practice may be different from this, and the template can be used to estimate local impact.

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Executive summary

This costing report looks at the resource impact of implementing the NICE-SCIE guideline 'Dementia: supporting people with dementia and their carers in health and social care' in England.

The costing method adopted is outlined in appendix A; it uses the most accurate data available, and was produced in conjunction with key clinicians, social care professionals and reviewed by clinical, social care and financial experts.

Supporting implementation

The NICE-SCIE guideline on dementia is supported by the following implementation tools (available on our website, www.nice.org.uk/CG042):

- costing tools
 - a national costing report; this document
 - a local costing template; a simple spreadsheet that can be used to estimate the local cost of implementation
- a slide set; key messages for local discussion
- implementation advice; practical suggestions on how to address potential barriers to implementation
- audit criteria.

A practical guide to implementation, 'How to put NICE guidance into practice: a guide to implementation for organisations' is also available to download from the NICE website. It includes advice on establishing organisational level implementation processes as well as detailed steps for people working to implement different types of guidance on the ground.

Significant resource-impact recommendations

Because of the breadth and complexity of the guideline, this report focuses on the recommendations that are considered to have a significant impact on

resources and will therefore require the additional resources to implement or that will generate savings.

The recommendations that are included in the cost template are the increases in psychological therapy offered to carers of people with dementia, structural imaging requirements and a reduction in the use of electroencephalograms (EEGs). Work has also been carried out on the recommendations in the guideline for coordination and integration of health and social care and on the training requirements although these costs are not included in the national cost assumptions. Following discussions with experts in an attempt to ascertain a baseline of current practice it was found that this baseline varied across organisations and therefore it was not possible to define a baseline of current practice

Consideration was also given to the recommendations for the assessment of carers, for people with dementia who have challenging behaviour and for memory assessment services. These recommendations were discussed and it is recognised that they may have cost implications for some local organisations however these recommendations have not been quantified in the national cost template due to varying baseline practice across organisations.

The true costs of dementia in England are not known. In cost-of-illness studies, the direct costs of Alzheimer's disease alone exceed the total cost of stroke, cancer and heart disease. It was estimated that the direct costs in the UK of Alzheimer's disease alone were between £7.1 billion and £14.9 billion in 2000. (Lowin et al. 2001) In 2003–4, the NHS spent around 43% of its hospital and community health service budget (£16.471 billion) on people over the age of 65. In the same year social services spent nearly 44% of its budget (£7.38 billion) on people over the age of 65. The figures are set to rise ('Everybody's business', 2005).

Total cost impact

The annual revenue changes in costs and estimated savings arising from fully implementing the guideline are summarised in the table below. It is

recognised that implementing the recommendations may take place over a number of years.

Summary of annual national revenue changes

Recommendations with significant resource impact	Annual cost, £000s
Costs	
Psychological therapy for carers of people with dementia	27,355
Structural imaging	20,206
Savings	
Reduced service costs through reduction in electroencephalograms (EEG)	-6,935
Total net cost of implementing dementia clinical guideline	40,626

It is reasonable to expect that additional costs will be incurred over and above those identified by this assessment. Additional costs may be incurred through the coordination and integration of health and social care by the establishment of joint procedures, processes, multidisciplinary teams, and effective working practices as recommended in 'Securing better mental health for older adults' (Department of Health, 2005) and 'Everybody's business' (Care Services Improvement Partnership, 2005).

These publications highlighted the need for agencies to work together, for improved skills and competencies of staff in all mainstream care settings to enhance detection and management of mental health problems, and for appropriate investment to support a comprehensive specialist mental health service for older adults. The level of coordination and integration of these services across the country varies and it was felt that it was inappropriate to include these costs at a national level and that organisations should investigate their own needs at a local level.

Another of the key recommendations is that staff working with older people in the health, social care and voluntary sectors should have access to dementia-care training that is consistent with their role and responsibilities. There are

different models of training available across the NHS and local government and it could be carried out in varied settings for example by using skill development training, formal classroom training, e-learning or mentoring. The guideline does not make any recommendations about the content of training or minimum standards that such training should achieve. It is therefore difficult to establish what the optimal training program might be and to assess how this would vary with current practice.

Benefits of treatment

Better co-ordination of health and social care can lead to long term benefits and savings including economies of scale, disinvestment in ineffective practice, single assessment points and single records.

The implementation of this guidance through training and the management of challenging behaviour may also lead to potential reduction in bed days in hospitals.

Diagnosis of dementia syndromes can be a prolonged iterative process, particularly in the early stages of the condition. The time from first symptoms to diagnosis can be as much as 12 months, for a number of reasons. The use of structural imaging to aid diagnosis may assist with early diagnosis and detect subcortical vascular changes.

Amongst all groups of carers, those providing care for people with dementia are among the most vulnerable and suffer from high levels of stress, feelings of guilt, depression and other psychological problems. When carers are well supported and well informed, people with dementia also benefit as a result and are enabled to live longer in their own communities. It is clear that carer interventions can be effective in relation to psychological health, burden and well-being. The relative efficacy of psychological therapy, usually CBT, on symptoms of depression and anxiety is evident and is likely be most helpful when targeted at those care givers whose anxiety and depression levels are within, or close to, the clinical range.

Local costing template

The local costing template produced to support this guideline enables organisations such as primary care trusts to estimate the budget impact locally and replace variables with ones that depict the current local position. A sample calculation using this template showed that a population of 300,000 could be expected to incur additional costs of about £307,000.

The costing template is designed to assist those assessing the resource impact of the guideline at a local level. NICE clinical guidelines are developmental standards within the Department of Health's document 'Standards for better health' and therefore full implementation of the guideline may take place over a number of years. The Commission for Social Care Inspection (CSCI) uses SCIE practice guides to underpin and develop inspection standards. The cost-impact data presented here may help inform local action plans demonstrating how implementation of the guideline will be achieved.

This costing report and costing template does not include the cost impact of the NICE technology appraisal 'Donepezil, galantamine, rivastigmine (review) and memantine for the treatment of Alzheimer's disease'. This can be found www.nice.org.uk/TA111

1 Introduction

1.1 *Supporting implementation*

1.1.1 The NICE clinical guideline on dementia is supported by the following implementation tools (available on our website, www.nice.org.uk/CG042):

- costing tools
 - a national costing report; this document
 - a local costing template; a simple spreadsheet that can be used to estimate the local cost of implementation
- a slide set; key messages for local discussion
- implementation advice; practical suggestions on how to address potential barriers to implementation
- audit criteria.

1.1.2 A practical guide to implementation, 'How to put NICE guidance into practice: a guide to implementation for organisations' is also available to download from the NICE website. It includes advice on establishing organisational level implementation processes as well as detailed steps for people working to implement different types of guidance on the ground.

1.2 *What is the aim of this report?*

- 1.2.1 This report provides estimates of the national cost impact arising from implementing the guidance on dementia. These estimates are based on assumptions about current practice and predictions of how current practice might change following implementation.
- 1.2.2 This report aims to help organisations in England plan for the financial implications of implementing NICE guidance.
- 1.2.3 This report does not reproduce the NICE guideline on dementia and should be read in conjunction with it (see www.nice.org.uk/CG042).

1.3 *Definition and prevalence of dementia*

- 1.3.1 Dementia is a progressive and largely irreversible clinical syndrome that is characterised by a widespread impairment of mental function. Although many people with dementia retain positive personality traits and personal attributes, as their condition progresses they can experience some or all of the following features: memory loss, language impairment, disorientation, changes in personality, difficulties with activities of daily living, self-neglect, psychiatric symptoms (for example, apathy, depression or psychosis) and out-of-character behaviour (for example, aggression, sleep disturbance or disinhibited sexual behaviour, although the latter is not typically the presenting feature of dementia).
- 1.3.2 Dementia is associated with complex needs and, especially in the later stages, high levels of dependency and morbidity. These complex needs often challenge the skills and capacity of carers and health and social services. As the condition progresses, people with dementia can present carers and health and social care staff with complex problems including aggressive behaviour, restlessness and wandering, eating problems, incontinence, delusions and hallucinations, and mobility difficulties that can lead

to falls and fractures. The impact of dementia on an individual may be compounded by personal circumstances such as changes in financial status and accommodation, or bereavement.

- 1.3.3 There have been several epidemiological studies of dementia. The Eurodem Consortium found prevalence rose from 1% for people aged 60–65 to 13% for people aged 80–85 and 32% for people aged 90–95 (Hofman et al. 1991). Overall, dementia affects around 5% of the over 65s, rising to 20% of the over 80s. The prevalence data used in the costing template are taken from ‘Dementia in people aged 65 years and older: a growing problem?’ (Office for National Statistics 1998). This UK study suggests that 1.3% of the English population have dementia
- 1.3.4 Incidence studies have shown rates of 1–3 per 1000 for those aged 65–70, rising to 14–30 per 1000 for those aged 80–85 (Fratiglioni et al. 2000; Jorm and Jolley 1998). The incidence data used in the costing template is taken from studies by Matthews and Brayne (2005) and Harvey and coworkers (2003). The incidence data suggests that 0.3% of the population, or 148,000 people, are diagnosed with dementia each year.

1.4 Models of care

- 1.4.1 In order to establish the model of care, we contacted clinicians involved in the care of people with dementia and discussed the current baseline treatment and how this may change following implementation of the guideline. Where possible, the costing report has attempted to estimate the average national baseline, taking into account wider practice within the NHS rather than concentrating on centres of excellence.

2 Costing methodology

2.1 Process

- 2.1.1 We use a structured approach for costing guidelines (see appendix A).
- 2.1.2 While researching the key cost drivers within this guideline varied information was collected and therefore we had to make some assumptions in the costing model. We developed these assumptions and tested them for reasonableness with members of the Guideline Development Group (GDG) and key clinical practitioners in the NHS and local government.
- 2.1.3 The costing template will allow local organisations to vary activity and cost figures to better reflect their particular circumstances.

2.2 Scope of the cost-impact analysis

- 2.2.1 The NICE-SCIE guideline sets out best practice guidance on the care of people of all ages with dementia. This includes the care of people with all the major forms of dementia including Alzheimer's disease, vascular dementia, Lewy body dementia, subcortical dementia, frontotemporal dementia and mixed cortical and subcortical dementia. Where appropriate, the guideline addresses the differences in treatment and care for people with mild, moderate and severe dementia. The guideline also includes special considerations for people with dementia who have learning disabilities.
- 2.2.2 This report considers direct costs to the NHS and councils with social services responsibilities that will arise from implementation in England. Where applicable, any cost savings arising from a change in practice have been identified and offset against the cost of implementing the change.

2.2.3 We initially considered all the recommendations in the guideline. However, because of the breadth and complexity of the guideline, we worked with the GDG and other health and social care professionals to identify the recommendations that would have the most significant impact on resources (see table 1). Costing work included in the template has focused on these specific recommendations.

Table 1 Recommendations that have significant impact on resources

Key areas	Recommendation number	Key priority for implementation?
<p>Care managers and care coordinators should ensure the coordinated delivery of health and social care services for people with dementia. This should involve:</p> <ul style="list-style-type: none"> – a combined care plan agreed by health and social services that takes into account the changing needs of the person with dementia and his or her carers – assignment of named health and/or social care staff to operate the care plan – endorsement of the care plan by the person with dementia and/or his or her carers <p>formal reviews of the care plan, at a frequency agreed between professionals involved and the person with dementia and/or their carers and recorded in the notes</p>	1.1.7.3	✓

Key areas	Recommendation number	Key priority for implementation?
Health and social care managers should ensure that all staff working with older people in the health, social care and voluntary sectors have access to dementia-care training (skill development) that is consistent with their roles and responsibilities.	1.1.9.1	✓
Carers of people with dementia who experience psychological distress and negative psychological impact should be offered psychological therapy, including cognitive behavioural therapy, by a specialist practitioner.	1.11.2.5	✓
Health and social care managers should coordinate and integrate working across all agencies involved in the treatment and care of people with dementia and their carers, including jointly agreeing written policies and procedures. Joint planning should include local service users and carers in order to highlight and address problems specific to each locality.	1.2.1.2	✓

Key areas	Recommendation number	Key priority for implementation?
Structural imaging should be used in the assessment of those with suspected dementia to exclude other cerebral pathologies and to help establish the subtype diagnosis. Magnetic resonance imaging (MRI) can be used, although MRI scanning is the preferred modality to assist with early diagnosis and detect subcortical vascular changes, although computed tomography (CT) scanning could be used. Specialist advice should be taken when interpreting scans in people with learning disabilities.	1.4.3.2	✓
Electroencephalography should not be used as a routine investigation in people with dementia.	1.4.3.7	

2.2.4 Eleven of the recommendations in the guideline have been identified as key priorities for implementation; five of these are among the recommendations considered to have significant resource impact and are included in this costing report.

2.2.5 The following key recommendations have been included within the costing template to form part of the national cost estimate and the local cost template: psychological therapy for carers, structural imaging to support diagnosis, electroencephalography should not to be used as a routine investigation.

2.2.6 Three other key recommendations were considered to have a potential significant resource impact and have been discussed within this national cost impact report. These are the key recommendations relating to coordination and integration of health and social care (1.1.7.3 and 1.2.1.2) and training (1.1.9.1).

- 2.2.7 The two key recommendations on non-discrimination (1.1.1.1) and valid consent (1.1.4.1) have been assessed as not generating any direct costs to the health and social care sectors.
- 2.2.8 Of the four remaining key recommendations, three are about the assessment services for carers (1.11.1.1), behaviour that challenges (1.7.1.1) and memory assessment (1.4.5.1). The remaining one is a recommendation on planning to meet the needs of people with dementia in acute and general trusts (1.1.11.1). These four recommendations were discussed and it is recognised that they may have cost implications for some local organisations but these recommendations have not been quantified in the national cost template due to varying baseline practice across organisations.

2.3 *General assumptions made*

- 2.3.1 The model is based on prevalence and population estimates.
- 2.3.2 The Office for National Statistics study 'Dementia in people aged 65 years and older: a growing problem' (1998) suggests that 1.3% of the English population have dementia. This amounts to more than 665,000 cases of dementia in England at any one time. The same study highlights the how the prevalence of dementia varies with age. Table 2 shows the prevalence of dementia and the total number of cases of dementia in England by age.

Table 2 Prevalence of dementia

Age	Male			Female		
	Population	Prevalence of dementia	Total number of people with dementia	Population	Prevalence of dementia	Total number of people with dementia
0-34	11,183,250	0.0%	0	10,939,127	0.0%	0
35-64	9,754,433	0.0%	3,780	10,001,726	0.0%	3,876
65-69	1,080,194	2.2%	23,765	1,155,502	1.1%	12,710
70-74	899,844	4.6%	41,393	1,043,881	3.9%	40,712
75-79	695,028	5.0%	34,751	919,988	6.7%	61,639
80-84	479,378	12.1%	58,005	784,071	13.5%	105,850
Over 85	275,683	27.4%	75,537	666,827	30.3%	202,048
Total	24,367,809		237,231	25,511,121		426,835

2.3.3 Studies by Matthews and Brayne (2005) and Harvey and coworkers (2003) suggest that 0.3% of the population, or 148,000 people, are diagnosed with dementia each year. The annual incidence of dementia varies with age. Table 3 outlines the annual incidence of dementia and the total number of new cases of dementia per year in England by age.

Table 3 Annual incidence of dementia

Age	Male			Female		
	Population	Annual incidence of dementia	Total number diagnosed with dementia each year	Population	Annual incidence of dementia	Total number diagnosed with dementia each year
0-34	11,183,250	0.0%	0	10,939,127	0.0%	0
35-64	9,754,433	0.0%	0	10,001,726	0.0%	0
65-69	1,080,194	0.4%	4,857	1,155,502	0.4%	4,571
70-74	899,844	0.9%	8,000	1,043,881	0.6%	6,571
75-79	695,028	1.4%	9,714	919,988	1.7%	15,714
80-84	479,378	2.3%	11,143	784,071	4.4%	34,857
Over 85	275,683	4.5%	12,286	666,827	6.0%	40,000
Total	24,367,809		46,000	25,511,121		101,713

2.4 Basis of unit costs

2.4.1 The way the NHS is funded has undergone reform with the introduction of Payment by Results, based on a national tariff. The

NICE–SCIE guideline recommends the use of structured imaging which is currently outside the national tariff.

2.4.2 Psychological therapy cost calculations have been based on therapies provided by NHS staff only. For the purpose of this report it is assumed that psychological therapies are currently provided by clinical psychologists, and that this will still be the case following implementation of the guideline.

2.4.3 The average grade for a clinical psychologist under Agenda for Change is Band 8a, the equivalent of National Joint Council (NJC) pay scale PO5 point 48, although it is recognised that local services may be provided by staff on higher or lower grades. Other trained staff such as social workers or community psychiatric nurses are capable of providing CBT, self-help or short-term psychotherapy for less severe cases. We have assumed that such members of staff will be employed on a mid-point Band 6 salary equivalent to PO1 point 35 within the National Joint Council (NJC) payscale. It is estimated that all these staff spend 55% of their time on client contact. The cost of therapy is based on the unit costs shown in table 4.

Table 4 Assumptions about clinical psychologists’ hourly rate

	Band 8a (mid-point)	Band 6 (mid- point)
Basic salary including on-costs	£46,235	£31,685
Working weeks per year (allowing for annual leave and training)	40	40
Working hours per week	37.5	37.5
Percentage of time spent with clients	55%	55%
Total hours per year of patient contact time	825	825
Cost per hour of patient contact	£56	£38

- 2.4.4 This table includes staff costs only and not indirect costs; for example, the amount of clinic space required may change with a change in staff numbers and service delivery configurations.
- 2.4.5 Unit costs for computed tomography (CT) and magnetic resonance imaging (MRI) have been taken from indicative tariff costs 2006–7 inflated by the national market force factor of 1.1233, and NHS reference costs 2004–5 inflated by 9.512%. The unit cost of an EEG has been taken from the University College London Provider to Provider Tariff 2006.

3 Cost of significant resource-impact recommendations

3.1 *Carers offered psychological therapy*

Background

- 3.1.1 The guideline states that carers of people with dementia who experience psychological distress and negative psychological impact should be offered psychological therapy, including CBT, by a specialist practitioner
- 3.1.2 No recommendations in this guideline set out in detail the management of the negative psychological distress in carers. We have therefore referred to the NICE clinical guideline 'Depression: management of depression in primary and secondary care' (2004) for a pathway of treatment.
- 3.1.3 Caring for a person with dementia is often compared with bereavement and there may be many losses for carers, for example losing the companionship of a spouse or partner, or losing a parent figure, income, or freedom to live one's own life.
- 3.1.4 Among all groups of carers, those providing care for people with dementia are among the most vulnerable and suffer from high

levels of stress, feelings of guilt, depression and other psychological problems (Brodaty et al. 2002; Sorensen et al. 2002).

3.1.5 To enable them to continue to look after a person with dementia and to make the best possible decisions for all concerned, carers need information about dementia and the treatments and services available, as well as legal, financial and benefits advice. They also need to be offered emotional support and have their own health needs recognised throughout the duration of the illness and following the death of the person with dementia

3.1.6 Support for carers in general has been given priority in both England and Wales, through carers' strategy documents, the Carers (Equal Opportunities) Act 2004, and associated SCIE guidance. Much of the support is provided through voluntary agencies, with some funding from local authorities. Support groups for carers have been developed in most areas of the UK, and training sessions are also offered. Alzheimer's Society support groups and services are widely available and a specialist nursing service, Admiral Nursing, is available in certain areas of England and Wales; the primary aim of this service is to support the of family and carers of people with dementia.

Assumptions made

3.1.7 Following discussions with experts it has been assumed for the purpose of the costing template that the ratio of persons with dementia to carers is 0.85

3.1.8 The Office for National Statistics publication, 'The mental health of carers' (2002) suggests that 5% of carers felt that their caring responsibilities made them feel depressed a lot of the time, and a further 27% felt depressed a little of the time. Other sources suggest that 29% suffer from case-level depression and 4% suffer from case-level anxiety (Coope et al. 1995). For the purposes of

the national costing template it is assumed that 33% of carers suffer from psychological distress.

- 3.1.9 'The mental health of carers' also says that although 24% of carers with a CIS-R score above 12 were receiving medication for a mental or emotional problem only 11% were receiving therapy or counselling. The report goes on to say that 8% of all carers were receiving medication and 3% were receiving therapy or counselling.
- 3.1.10 It is assumed that 75% of people offered therapy will agree to participate. Local participation rates may vary.
- 3.1.11 As described in 2.4.2 and 2.4.3 above the cost of a clinical psychologist or community psychiatric nurse within the NHS has been used to form the basis for the unit cost of CBT and other psychological interventions.
- 3.1.12 We have assumed that the severity of psychological distress among carers and the therapeutic response will be similar to that used in the cost impact assessment for the NICE guideline on the management of depression (2004). The proportion of severity of psychological distress is shown in table 5.

Table 5 Assumptions about severity of psychological distress

Severity	Proportion	Psychological intervention
Mild	36%	self help/short-term psychotherapy
Moderate	43%	CBT
Severe	21%	

- 3.1.13 We have assumed that, of people with mild psychological distress, the split between self-help and short term psychotherapy is 50:50.
- 3.1.14 Table 6 shows the numbers of carers identified with psychological distress.

Table 6 Assumptions about population with psychological distress

Assumption	Value	Population
Prevalence of dementia		664,066
Proportion of people with dementia with a carer	85%	564,456
Proportion of carers accepting psychological therapy	75%	423,342
Proportion of carers identified with psychological distress	33%	139,703
Proportion of carers with mild psychological distress	36%	50,293
Proportion of carers with moderate psychological distress	43%	60,072
Proportion of carers with severe psychological distress	21%	29,338

3.1.15 For the purposes of the national cost data, twelve sessions of CBT or other psychological therapy have been assumed to make up a full session of therapy. Expert opinion suggests that between fifteen and 20% of people drop out after attending an average of three sessions of CBT. A dropout rate of 18% has been factored into the cost impact calculation.

Table 7 Unit costs of psychological therapy

	Self-help course	Short term psychotherapy	CBT
Number of visits/sessions per patient	3	6	12
Percent of patients who will not complete course	18%	18%	18%
Average number of visits per patient who does not complete	1	2	3
Average number of sessions per patient	2.64	5.28	10.38
Length of sessions, minutes	20	45	60
Number of treatment hours per course	0.88	4.96	10.38
Banding of staff delivering the therapy	6	6	6 and 8a
Staff cost per hour spent with patient	£38	£38	£47
Unit cost of self-help booklet	£2	£0	£0
Total	£35	£188	£488

3.1.16 The cost of CBT shown is based on a mixed provision by psychiatric nurses and clinical psychologists. If CBT were provided only by clinical psychologists the unit cost would be £581.28, if provided only by psychiatric nurses the unit cost would be £398.65. These costs will be used as minimum and maximum values in the sensitivity analysis below.

Cost summary

3.1.17 The national cost impact of the recommendation as calculated through the assumptions outlined above is £27.43 million. The net cost of recommended psychological intervention is summarised below in table 8.

Table 8 Total cost impact of CBT and psychotherapy for carers of people with dementia

England	Average Unit cost, £	Current activity	Proposed Activity	Additional activity required	Total cost impact, £000s
Psychological therapy - self help	£35	11,176	25,147	13,971	489
Psychological therapy - short intervention	£188	11,176	25,147	13,971	2,627
CBT	£488	39,738	89,410	49,672	24,240
Total		62,090	139,704	77,614	27,355

Other considerations

3.1.18 The suitable range of therapies and number of sessions may be different for each person identified.

3.1.19 A larger meta-analysis by Sorensen and colleagues (2002) included studies in which carers of people with dementia were not specifically targeted, although in all the studies the care recipients had an average age of 60 or older. The results from this analysis (considering RCTs only), suggested that psychological therapy (typically CBT) and psychoeducation programmes had the best outcome in relation to depression.

- 3.1.20 The NICE–SCIE guideline recommendations also state that other forms of intervention may be suitable, such as interventions involving training or stress management or involving the person with dementia alongside the carer
- 3.1.21 No one approach is sufficient to meet the range of needs, situations and preferences of carers. Multi-component interventions perhaps offer the best chance of success, combining, for example, psychoeducation, skills training and support groups. There is increasing development of telephone and internet-based systems for provision of information and support, which may be a useful additional component.
- 3.1.22 The increased demand for therapy services arising from increased referral of people recommended within this guideline may have implications for workforce levels and training capacity.

3.2 *Structural imaging for diagnosis*

Background

- 3.2.1 Structural imaging should be used in the assessment of those with suspected dementia to exclude other cerebral pathologies and to help establish the subtype diagnosis. MRI is the preferred modality to assist with early diagnosis and detect subcortical vascular changes, although CT scanning could be used. Specialist advice should be taken when interpreting scans in people with learning disabilities.

- 3.2.2 There are two main reasons for undertaking structural imaging in people with suspected dementia. The first is to exclude an intracerebral lesion as a cause for the cognitive impairment. Systematic reviews have suggested that between 2.2 and 5% of cases with suspected dementia had conditions that required structural neuroimaging to assist with diagnosis (Chui and Zhang 1997; Clarfield 2003).
- 3.2.3 The second use of structural imaging is to inform the subtype-specific diagnosis of dementia, in particular differentiating Alzheimer's disease from vascular and frontotemporal dementia.

Assumptions made

- 3.2.4 For the purpose of costing it is assumed that CT scanning or MRI would be suitable for 85% of people and unsuitable for the remaining 15%, including those who find MRI claustrophobic or have contraindications such as pacemakers or metallic implants. .
- 3.2.5 Following discussions with experts it has been assumed that based on the incidence figures used in these costing tools; an additional 50% of people will undergo imaging to form part of their diagnosis who then will not be diagnosed as having dementia. Therefore 222,135 people would undergo imaging to support their diagnosis. Expert opinion suggests that currently 32% of people with suspected dementia undergo structural imaging as part of their diagnosis. Assumptions made in the costing tool are that 2% of people have an MRI scan and 30% have CT scan.
- 3.2.6 Following discussions with experts, we have assumed that the NICE–SCIE guidance will lead to structural imaging being used in the assessment of 75% those with suspected dementia.
- 3.2.7 Based on incidence levels of dementia used in the costing template there will be an increase of 54,126 in people having structural imaging to support diagnosis, from 40,281 to 94,487 people.

3.2.8 Indicative national reference costs for 2006–07 uplifted by the national market force factor of 1.12233 have been used in this cost exercise. This gives the average cost of an MRI scan as £345 and of a CT scan as £181.

3.2.9 Lower and upper quartile unit costs from NHS reference costs based on procedures performed by acute trusts (2004–5 costs uplifted by 9.512% for inflation to 2006–7 costs) have been used as minimum and maximum costs in the sensitivity analysis below to show the impact of this variable on the overall cost impact. The unit costs are summarised in table 9.

Table 9 Unit cost of MRI scans and CT

Banding label	Code	Average unit cost, £	Lower quartile, £	Upper quartile, £
Band F1 - MRI	RBF 1	345	204	577
Band D1 - CT	RBD 1	181	117	214

Cost summary

3.2.10 The cost of the using structural imaging to support the diagnosis of dementia is estimated at being £20.27 million. The net cost of recommended structural imaging is summarised in Table 10.

Table 10 Total cost impact of changes to use of structural imaging

Incident cases, England	Average unit cost, £	Current activity, scans	Proposed activity, scans	Additional activity required, scans	Total cost impact, £000s
MRI scans	345	3,767	37,667	33,900	11,696
CT scans	181	56,500	103,584	47,084	8,522
Total		60,267	141,251	80,984	20,218

Other considerations

3.2.11 The work of the Department of Health’s diagnostic imaging work programme will support the implementation of this guidance. The programme includes the development of direct referral protocols

jointly with the Royal College of Radiologists and the Royal College of General Practitioners, providing additional capacity through a national procurement exercise with the independent sector, and work aimed at improving utilisation by setting optimum utilisation rates for imaging equipment and assessment of workforce and training.

3.2.12 Locally there may be variation in the type of scan used, depending on availability, accessibility and waiting times.

3.2.13 The increased demand for structural imaging arising from increased referral of people recommended within this guideline may have implications for workforce levels and training capacity.

3.3 *Electroencephalograms (EEGs)*

Background

3.3.1 The NICE–SCIE guideline states that EEGs should not be used as a routine investigation in people with dementia, but that EEGs may be used when a diagnosis of delirium, frontotemporal dementia or Creutzfeldt–Jakob disease is suspected, or in the assessment of associated seizure disorder in those with dementia.

3.3.2 Many studies have investigated the ability of an EEG to separate Alzheimer’s disease from normal ageing (Jonkman 1997) and, less commonly, other causes of dementia (Walker et al. 2000). Many rely on complex quantitative techniques that are not applicable clinically.

3.3.3 The resting EEG is often diffusely abnormal in dementia and may not be useful as a routine investigation. However, its use in selected cases can be helpful.

Assumptions made

3.3.4 Expert opinion informed the GDG’s estimate that EEG is currently used as part of the diagnostic testing for dementia in 15% of all

incident cases. It is assumed that in the future the use of EEG will reduce to 7.5% of all incident cases.

3.3.5 Following discussions with experts it has been assumed that based on the incidence figures used in these costing tools, an additional 50% of people will undergo imaging to form part of their diagnosis who then will not be diagnosed as having dementia. Therefore 222,135 people would undergo imaging to support their diagnosis.

Cost summary

3.3.6 The estimated saving from this reduction in the use of EEGs is £6.95 million. The calculation is summarised below in Table 11.

Table 11 Total cost impact of changes to use of EEGs

Incident cases, England	Average unit cost, £	Current activity, scans	Proposed activity, scans	Reduced activity, scans	Total cost impact, £000s
EEG	£226	33,235	2,493	-30,742	-6,935

3.4 Training

Background

3.4.1 One of the guideline's key recommendations states that 'Health and social care managers should ensure that all staff working with older people in the health, social care and voluntary sectors have access to dementia-care training (skill development) that is consistent with their roles and responsibilities'

3.4.2 This recommendation has not been included in the cost template. Discussions with experts, NHS organisations and local authorities have taken place in an attempt to ascertain a baseline of current practice.

- 3.4.3 The training currently on offer within the organisations contacted varied because of factors including staff profile, organisational structure and funding allocated to training. It was therefore not possible to define a baseline of current practice.
- 3.4.4 The full guideline cites many research documents that have been reviewed to support the training recommendation, one of those being a STAR (staff training in assisted-living residences) programme (Teri et al. 2005). The STAR programme is described below as an example of the type of training that could be implemented.
- 3.4.5 The STAR trial provided two 4-hour workshops, four individually tailored on-site consultations and three leadership sessions in 15 assisted-living residences in the USA (Teri et al. 2005). Assisted-living residences would be similar to sheltered housing, residential homes or nursing homes in England. The study aimed to reinforce values of dignity and respect for residents and improve staff responsiveness, skills and job satisfaction. The workshops covered multiple approaches to learning, including didactic content, case studies, discussion and group exercises. The on-site sessions allowed on-the-job practice of training skills. Leadership sessions were run as workshops for supervisors and administrators.
- 3.4.6 STAR was exceptionally well received; after the training residents showed significantly reduced levels of affective and behavioural distress compared with those in control residences. Residents in places where staff received STAR improved, whereas those in control residences worsened, and staff who received STAR reported less adverse impact and reaction to residents' problems and more job satisfaction.
- 3.4.7 The estimated unit cost of staff costs to deliver the STAR training programme is £1119.

3.4.8 A model of the unit cost of a STAR programme is shown in table 12 to aid local planning for training that may be delivered following this programme

Table 12 Unit cost of STAR programme

2 x 4 hour workshops	£407
4 individualised on-site consultations @ 2 hours	£407
3 leadership sessions @ 2 hours	£305
Total unit cost per STAR programme	£1,119

3.4.9 For the purpose of costing it is assumed that the STAR programme is delivered by a clinical psychologist and a graduate nurse, following the recommendations made in the study. The training cost calculations have been based on training NHS staff only.

3.4.10 The training sessions include six core subjects: understanding dementia; ageing; person-centred care; communicating with people with dementia; loss, stress and change in dementia; and enabling approaches to activities of daily living. This course is for seven full days and three half days and there are also work-based assignments to be completed.

3.4.11 These courses are delivered to groups of approximately 20 people on the training course together and are aimed at paid staff who regularly work with people with dementia including care assistants, home care workers and nursing assistants. The current cost of the training course is approximately £650 per trainee.

3.4.12 Sufficient budgetary provision (backfill) will need to be made to make it possible to release staff to attend training. Training programmes that remove staff from their posts without providing adequate cover can compromise the safe delivery of care.

3.4.13 It was therefore assumed that all staff members released from their normal duties to attend the training sessions their posts will be sufficiently covered. The cost of providing cover or backfill was calculated on the basis of a clinical support worker, Agenda for Change band 3 point 10 salary with on-costs. This amounts to £90 per day. This is the equivalent of National Joint Council salary scale 3 point 16.

Assumptions made

3.4.14 For the purpose of costing it is assumed that the STAR programme is delivered by a clinical psychologist and a graduate nurse, following the recommendations by (Teri et al. 2005). The training cost calculations have been based on NHS staff only.

3.4.15 The average grade for a clinical psychologist under Agenda for Change is band 8a and for a graduate nurse is band 5. It is recognised that local services may be provided by staff on higher or lower grades. Other trained staff, such as older people service managers, social workers or carers could provide training. The equivalent pay grade under the National Joint Council (NJC) pay scales are PO5 scale point 48 and scale 6 point 27 respectively.

Table 13 shows the assumed hourly rate of a clinical psychologist and graduate nurse

Table 13 Assumption about hourly rate for staff involved in delivering STAR programme

Trainers	Clinical psychologist	Nurse specialist
Band and salary point	Band 8a mid point (37)	Band 6 mid point (27)
Basic mid-point salary including oncosts	44700	31530
Working weeks per annum (allowing for annual leave)	40	40
Working hours per week	37.5	37.5
Total working hours per annum.	1500	1500
Hourly rate	£30	£21

3.4.16 This table includes staff costs only. No costs for production of material, time for preparation, indirect costs or opportunity costs have been included.

3.4.17 The unit costs identified may be able to be charged directly to the organisations receiving the training for example independent care homes. This will depend upon local organisational structures and service agreements.

Other considerations

3.4.18 The above information has been produced as a model to aid the planning of training required at a local level. The training sessions may be delivered by different personnel within local organisations or training services already providing these services.

3.4.19 The unit costs identified may be able to be charged directly to the organisations receiving the training for example independent care homes. This will be dependent upon local organisational structures and service agreements.

3.5 *Coordination and integration across all agencies*

3.5.1 The guideline recommends that health and social care managers should coordinate and integrate working across all agencies involved in the treatment and care of people with dementia and their carers, including jointly agreeing written policies and procedures. Joint planning should include local service users and carers in order to highlight and address problems specific to each locality.

3.5.2 It also recommends that care managers and coordinators should ensure the coordinated delivery of health and social care services for people with dementia. This should involve:

- a combined care plan agreed by health and social services that takes into account the changing needs of the person with dementia and his or her carers
- assignment of named health and/or social care staff to operate the care plan
- endorsement of the care plan by the person with dementia and/or his or her carers
- formal reviews of the care plan, at a frequency agreed between professionals involved and the person with dementia and/or their carers and recorded in the notes. These recommendations have not been included in the cost template. Experts, NHS organisations and local authorities have been consulted in an attempt to ascertain a baseline of current practice, organisational structures, processes and procedures.

- 3.5.3 Current organisational structures vary across the country, with organisations operating under different levels of integration and joint working. The recommendation states that joint working should address problems specific to each locality, so it was not possible to define a baseline of current and future practice.
- 3.5.4 Establishing joint working and coordinated delivery of health and social care services for people with dementia may initially incur additional costs. These costs may be incurred by the establishment of joint procedures, processes, multidisciplinary teams, and effective working practices as recommended in 'Securing better mental health for older adults' (Department of Health 2005) and 'Everybody's business' (CSIP 2005). These may be significant locally dependent on current structure and location of services.
- 3.5.5 Once services are established it is assumed that they will be cost neutral or cost saving. Savings may include more efficient systems and procedures, disinvestment from ineffective practice, and single assessment points and records leading to reduced duplication of duties and economies of scale. These may be significant locally depending on current service structures.

4 Sensitivity analysis

4.1 *Methodology*

- 4.1.1 There are a number of assumptions in the model for which no empirical evidence exists. Because of the limited data the model has been based mainly on discussions of typical values with NHS practitioners, and is therefore subject to a degree of uncertainty.
- 4.1.2 As part of discussions with practitioners, we considered possible minimum and maximum values of variables and calculated their impact on costs across this range.

- 4.1.3 It is not possible to arrive at an overall range for total cost because the minimum or maximum of individual lines would not occur simultaneously. We undertook one-way simple sensitivity analysis, altering each variable independently to identify those that have greatest impact on the calculated total cost.
- 4.1.4 A table detailing all variables modified is contained in appendix B and the two elements that have greatest impact are discussed in section 4.2.

4.2 *Impact of sensitivity analysis on costs*

Proportion of carers to receive psychotherapy

- 4.2.1 The estimated unit cost of a session of CBT used in the cost assessment is £488. Values of £399 and £582 have been chosen as minimum and maximum unit costs for this sensitivity analysis.
- 4.2.2 When the minimum and maximum unit costs are added to the costing model, the overall resource impact of the recommendations ranges from £36.985 million to £44.276 million.
- 4.2.3 The estimated proportion of carers currently receiving psychological therapy has been assumed at 11%. Values of 6% and 16% have been chosen as a minimum and maximum proportion for this sensitivity analysis.
- 4.2.4 When the minimum and maximum values are added to the costing model, the overall resource impact of the recommendations ranges from £30.757 million to £50.703 million.
- 4.2.5 The estimated proportion of carers who have been identified as having psychological distress in the future and receiving psychological therapy has been assumed at 33%. Values of 23% and 33% have been chosen as a minimum and maximum proportion for this sensitivity analysis.

4.2.6 When the minimum and maximum unit values are added to the costing model, the overall resource impact of the recommendations ranges from £25.771 million to £55.689 million.

MRI scans

4.2.7 The annual unit cost per MRI scan used in the cost assessment is £343. Values of £204 and £577 have been chosen as minimum and maximum unit costs for use in this sensitivity analysis.

4.2.8 When the minimum and maximum unit costs are added to the costing model, the overall resource impact of the recommendations ranges from £35.943 million to £48.620 million.

4.2.9 The estimated proportion of people to be scanned in the future using MRI scans has been included in the cost assessment at 20%. Values of 15% and 25% have been chosen as minimum and maximum unit costs for use in this sensitivity analysis.

4.2.10 When the minimum and maximum values are added to the costing model, the overall resource impact of the recommendations ranges from £37.474 million to £43.986 million.

5 Conclusion

5.1 *Total national costs for England*

5.1.1 Based on the recommendations that have significant resource impact (table 1) and the assumptions specified within the report we have calculated the cost of fully implementing this guideline to be £40.73 million, as detailed in table 14.

Table 14 Total budget impact from the implementation of recommendations with significant resource impact

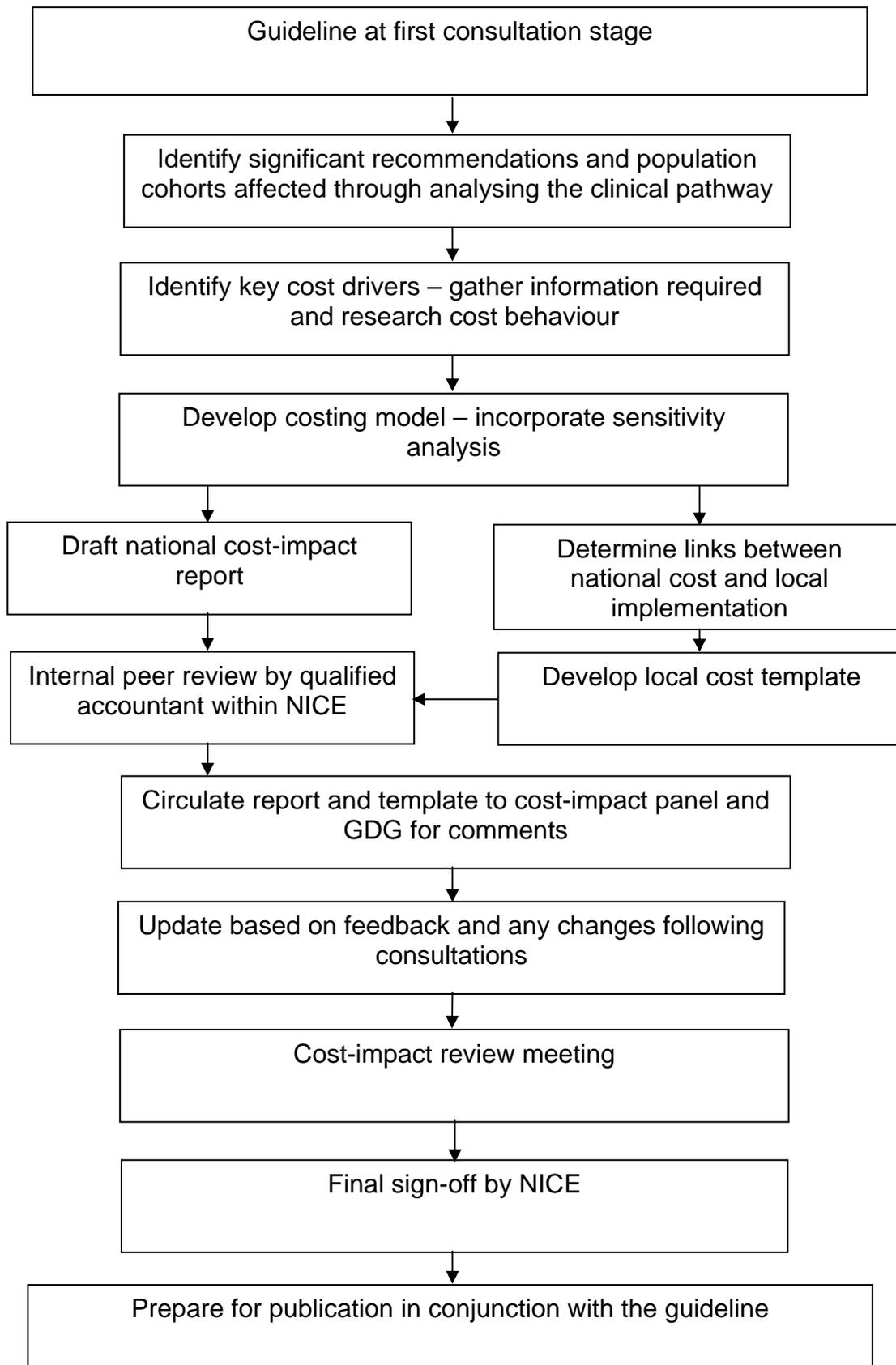
Recommendations with significant resource impact	Annual cost, £000s
Costs	
Psychological therapy for carers of people with dementia	27,355
Structural imaging	20,206
Savings	
Reduced service costs through reduction in electroencephalograms (EEG)	-6,935
Total net cost of implementing dementia clinical guideline	40,626

5.1.2 The accompanying template (available from www.nice.org.uk/CG042) enables you to update assumptions to reflect local practice and costs.

5.2 Summary

5.2.1 We consider this assessment to be reasonable, given the limited detailed data regarding diagnosis and treatment paths and the time available. However, the costs presented are estimates and should not be taken as the absolute cost of implementing the guideline.

Appendix A: Approach to costing guidelines



Appendix B: Results of sensitivity analysis

Assessment of sensitivity costs to a range of variables

Parameter Varied	Baseline value	Minimum value	Maximum value	Baseline cost £000s	Minimum cost £000s	Maximum cost £000s	Change £000s
Prevalance of dementia	665,773	599,196	732,350	40,730	37,987	43,473	5,486
Cases eligible for scanning	222,135	199,922	244,349	40,730	39,400	42,060	2,660
Unit cost of CBT session	£488	£399	£582	40,730	36,298	45,411	9,113
Unit cost of MRI scan	£345	£204	£577	40,730	35,943	48,620	12,677
Unit cost of CT scan	£181	£117	£214	40,730	37,716	42,295	4,579
Unit cost of EEG scan	£226	£168	£281	40,730	42,505	39,022	-3,483
Proportion of carers currently receiving psychological therapy	11.0%	6.0%	16.0%	40,730	50,703	30,757	-19,946
Proportion of carers identified with psychological distress	33.0%	23.0%	43.0%	40,730	25,771	55,689	29,918
Proportion of people suitable to be scanned	85.0%	80.0%	90.0%	40,730	41,409	40,051	-1,358
Proportion of people currently being scanned using MRI	2.0%	1.0%	3.0%	40,730	41,381	40,079	-1,302
Proportion of people estimated to be scanned using MRI	20.0%	15.0%	25.0%	40,730	37,474	43,986	6,512
Proportion of people currently being scanned using CT	30.0%	25.0%	35.0%	40,730	42,438	39,023	-3,415
Proportion of people estimated to be scanned using CT	55.0%	50.0%	60.0%	40,730	39,023	42,438	3,415
Proportion of EEG carried out	15.0%	10.0%	20.0%	40,730	43,048	38,412	-4,636
Proportion of EEG continuing to be undertaken	7.5%	5.0%	10.0%	40,730	40,542	40,918	376

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