# Modelling the economic impact of Cantab Mobile use in UK primary care in the dementia diagnostic pathway

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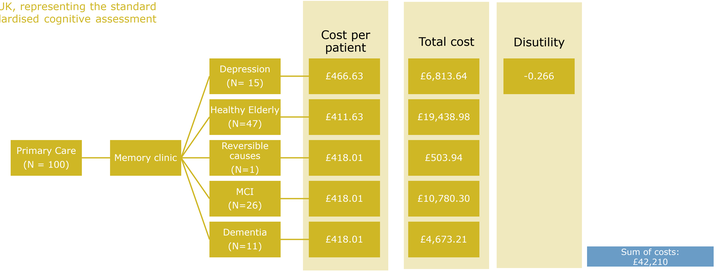
## Background

- Accurate and timely diagnosis of dementia is important to allow individuals to access support, plan for the future and commence treatments.
- There is regional variability in the number of people diagnosed in a timely manner in the UK, with diagnosis rates ranging from 31.6 per cent to 75.5 per cent, with a national average of 46 per cent[1,2]. In the UK, primary care acts as gatekeeper to the dementia diagnosis pathway, conducting basic initial assessment and deciding which patients should be referred for further investigation. In 2012 the UK launched the Dementia Challenge, which is a programme of work designed to make a difference to the lives of people with dementia and their families and carers, including the way in which people with dementia are diagnosed.
- Cantab Mobile is a brief and language-free assessment of episodic memory, depression and activities of daily living designed to help primary care physicians make more informed decisions when making referrals to secondary care memory clinic services.
- **This model aims to evaluate the cost-effectiveness of introducing Cantab Mobile to the standard diagnostic pathway for patients presenting with subjective memory complaints (SMC) in the UK.**

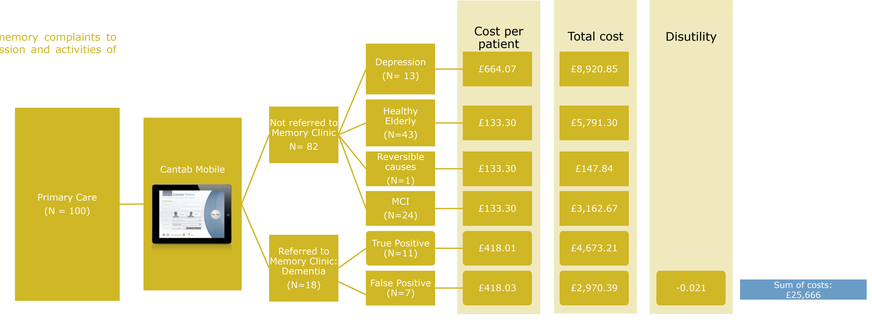
Figure 1. Decision tree model of 100 patients presenting with subjective memory complaints to primary care in the UK, representing the standard diagnostic pathway. In this model no standardised cognitive assessment is used in primary care.




## Methods

- We calculated the propensity of different groups to present to primary care with subjective memory complaints (SMC), including dementia, mild cognitive impairment, depression and the worried well.
- The cost of diagnosing these patients in the current standard diagnostic pathway was compared against that of a diagnostic pathway using Cantab Mobile in the primary care setting.
- In the standard pathway it was assumed that all patients would receive assessment in primary care and a memory clinic. Patients with depression alone would also receive GP assessment after the memory clinic for diagnosis.
- When Cantab Mobile is introduced it was assumed that patients would incur the same primary care costs as in the standard care arm. Only patients identified by Cantab Mobile as having clinically relevant memory impairment (true positives and false positives for dementia) would go on to the memory clinic. Sensitivity and specificity for Cantab were 100% and 92%, respectively. As use of Cantab would result in diagnosis of depression earlier than in the standard pathway the cost of additional depression treatment costs were also included for the duration of the memory clinic waiting time (3.12 months).
- The cost of the diagnostic pathway was calculated from published literature[3], and was assumed to follow current UK NHS Clinical Guidelines[4].
- The disutility of having undiagnosed depression was applied. In the standard pathway this was for the duration of the memory clinic waiting time. In the Cantab pathway this was applied to those patients with depression comorbid with dementia whose depression was not diagnosed until after the memory clinic dementia diagnosis. As use of Cantab Mobile allows earlier diagnosis of depression in the absence of memory impairment, disutility was averted for those patients presenting with depression alone.
- One-way sensitivity analysis was carried out on key model parameters. The disutility associated with untreated depression was also calculated in the model.

Figure 2. Decision tree model of 100 patients presenting with subjective memory complaints to primary care in the UK, with a standardised assessment of memory, depression and activities of daily living being used in primary care.




## Results

- The model estimated that, based on published sources on presenting populations, 47% of people presenting to primary care with SMC are likely to be 'worried well' and an additional 15% to have depression and not dementia. Therefore, over half of patients presenting to primary care with SMC may not need referral to more costly dementia services, and could be monitored or managed locally.
- In the standard diagnostic pathway, the average diagnostic cost per patient presenting to primary care was £422.10.
- However, systematic use of a suitable cognitive test and depression screen in patients with SMC resulted in a reduction in diagnostic costs of 40% in comparison to no systematic assessment.
- Additional quality of life benefits were associated with earlier depression detection, including an associated reduction in disutility of 0.002 quality-adjusted life-years QALY's (per patient).

## Conclusions

- **This model illustrates the health economic benefits of accurate and appropriate primary care triage of possible dementia cases in the UK.**
- **Because primary care plays a key role in supporting and meeting the demands of an aging population, these findings have important implications for future service planning and healthcare providers.**

References :
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