Effectiveness of screening for risk of medical emergencies in the elderly

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Abstract

Study objective: UK government policy mandates the introduction of ‘intermediate care services’ to reduce emergency admissions to hospital from the population aged 75 years or more. We evaluated one of these initiatives—the Keep Well At Home (KWAH) Project—in a West London Primary Care Trust.

Design: KWAH involves a two-phase screening process, including a home visit by a community nurse. We employed cohort methods to determine whether KWAH resulted in fewer emergency attendances and admissions to hospital in the target population, from October 1999 to December 2002.

Results: estimated levels of coverage in the two phases of screening were 61 and 32%, respectively. The project had not maintained records of which additional health and social care services had been delivered following screening. The rates of emergency admissions to hospital in the 9 months before screening were similar in practices that did and did not join the project (rate ratio (RR) = 1.05; 95% CI 0.95–1.17), suggesting absence of volunteer bias. Over the first 37 months of the project, there was no significant impact on either attendances at Accident & Emergency departments (RR = 1.02; 95% CI 0.97–1.06) or emergency admissions of elderly patients (RR = 0.98; 95% CI 0.93–1.05).

Conclusion: the KWAH Project has been ineffective in reducing emergency admissions among the elderly. Significant questions arise in relation to selection of the screening instruments, practicality of achieving higher coverage of the eligible population, and creation of a new postcode lottery.

Keywords: screening, elderly, emergency, National Service Framework, EASY-Care Questionnaire

Introduction

From March 2001, UK government policy has prescribed eight ‘standards’ designed to achieve ‘better, fairer and more integrated health and social care services for older people’ [1]. In particular, one part of this policy (Standard 3) deals with intermediate care services, which are explained in the following terms: ‘Older people will have access to a new range of intermediate care services at home or in designated care settings, to promote their independence by providing enhanced services from the NHS and councils to prevent unnecessary hospital admission and effective rehabilitation services to enable early discharge from hospital and to prevent premature or unnecessary admission to long-term residential care’ [1].

Eighteen months before promulgation of the policy, in September 1999, a consortium of organisations involved in local health and social services had begun operating the ‘Keep Well At Home’ (KWAH) Project in the Borough of Hammersmith and Fulham (H&F) in West London. This was a two-phase screening and intervention programme aimed at persons aged 75 years or older who were ‘at risk’ of medical emergencies. The introductory materials for KWAH anticipated that participation in the project by a general practice would result in a variety of positive outcomes (see Appendix 1 in the supplementary data on the journal website www.ageing.oupjournals.org).

This paper describes an evaluation of the KWAH Project undertaken by its steering group in conjunction with the local academic department of primary care at Imperial College.
Methods

The KWAH Project was launched in seven volunteer practices in H&F in September 1999. In two subsequent waves of expansion, it came to involve 20 of the 38 practices in the H&F Primary Care Trust (PCT). The broad aims of the project were: (i) to contact by letter, all people aged 75+ registered with a participating practice to inform them of the project, (ii) to administer a brief “screening tool” to establish an individual’s risk status, (iii) using identified and agreed criteria, establish the “at risk” register, (iv) to implement agreed assessment and intervention, including onward referral, and (v) to record information and evaluate outcomes against agreed baseline data including emergency admission figures [KWAH Project, unpublished]. The evaluation study began in June 2002.

Population eligible for screening

Participating practices were provided with written instructions defining the population eligible for screening as patients on the practice list who were aged 75 years or more, resident in the Borough of H&F but not in a long-stay institution, and not receiving domiciliary nursing services.

Protocol for screening

In the first phase of screening, eligible patients were sent the Sherbrooke Questionnaire for self-completion and return to the practice via a reply-paid envelope. The Sherbrooke Questionnaire has its origins from various instruments including a postal survey for undiagnosed morbidity and disability undertaken in a Glasgow general practice by Barber [2]. Subsequently, Hebert, working in Sherbrooke in Canada, showed that response to a 21-item instrument based on Barber’s Questionnaire predicted ‘functional decline‘ over the subsequent year [3]. His composite endpoint included death, a move from private to institutional accommodation and increased disability. Statistical analyses revealed that most of the predictive power was carried by six of the 21 items, and these six form the Sherbrooke Questionnaire. The KWAH Project added two further items about falls in the last year and willingness to be visited at home by a community nurse to discuss the individual’s responses to the questionnaire (see Figure 1).

Patients who failed to return a questionnaire after up to one reminder letter or who answered at least two of the six Sherbrooke items in the affirmative were deemed ‘at risk’ and therefore eligible for the second-phase screening assessment. This involved a home visit by a community nurse and completion of the ‘EASY-Care’ Questionnaire plus recording of a list of medications being taken and, where relevant, a history of falls within the previous year.

The EASY-Care instrument was developed in a joint EU-funded project to assess disability in the elderly [4]. It consists of a compilation of sections of other, validated instruments, such as the Barthel Index of activities of daily living, and assigns an overall score ranging from 0 (low disability) to 100 (high disability) points [5]. It appears that the instrument has never been validated as a tool for planning care as opposed to evaluating disability.

Post-screening interventions

In the KWAH Project there was no prescribed threshold EASY-Care score for arranging for the patient to receive additional health and social care services, nor any algorithm linking the specific services ordered to the pattern of the individual’s responses. It was left to the professional judgement of the community nurse, with support, if required, from the project coordinator, as to which, if any, of a range of personal care, domestic care, home maintenance and rehabilitation services was recommended for each participant.

Approach to evaluation

The evaluation study sought to address the structure and process of the KWAH Project, as well as the five outcomes listed in Appendix 1. Structure and process were assessed via a mixture of qualitative (such as examination of documents, and field observations) and quantitative (such as measurement of coverage, and proportions deemed ‘at risk’) methods. Of the outcomes listed in Appendix 1, it was possible to obtain data on emergency attendances and admissions at local hospitals by patients of general practices in the H&F PCT, but no methods had been developed by KWAH for recording ‘crisis situations’, emergency consultations and home visits by general practitioners, the strength of links between social, health and voluntary services, or the degree of independence or quality of life of members of the target population. A local research ethics committee declined permission for KWAH to conduct a randomised controlled trial to assess the impact of an EASY-Care assessment and subsequent intervention on demand for emergency care on the grounds that having been defined as being ‘at risk’, patients could not be denied the additional appraisal and services.

Statistical methods

We summarised coverage by the two phases of screening and patterns of ‘at risk’ status as percentages and adopted cohort
methods to examine the impact of the KWAH Project on attendances at Accident and Emergency departments (A&Es) and emergency admissions to the hospitals serving this population: Charing Cross Hospital, Hammersmith Hospital and Chelsea and Westminster Hospital. Working from the registered population of persons aged 75 and older ('elderly persons') for each practice in H&F as at 1 July 2001, data from the A&Es of the three hospitals for the four calendar years beginning on 1 January 1999, and the dates that particular practices joined the KWAH Project, we were able to classify each attendance at an A&E and each emergency admission as having occurred during an 'exposed' or 'unexposed' period, and to calculate the total 'exposed' person-time for elderly persons among those practices that joined the project. We then calculated three rate ratios and corresponding 95% confidence intervals (CIs). First, we compared rates of admissions from or via A&E departments for elderly patients of practices that were, or were not, participating in the KWAH Project October 1999–December 2002.

Ethical considerations
After entry of data, name-identified records were returned to the KWAH Project and all analyses were performed on anonymised files.

Results
As participating practices were not instructed to annotate their registers of older patients to indicate which were excluded from the KWAH Project and why, it was not possible to define the population eligible for screening. However, records held by H&F PCT gave the total population of elderly persons in participating practices on 1 July 2001 as 3,781. With 2,307 Sherbrooke Questionnaires returned (5% of which were incomplete), estimated coverage by the first-phase screen was 61%. Based on answers to the questionnaire, 58% (1,346) of respondents were 'at risk'. However, a further 1,474 individuals were deemed 'at risk' through failure to return a questionnaire, giving an overall prevalence of 75% (2,820/3,781). With 931 EASY-Care forms at least partially completed, estimated coverage in the second-phase assessment was 32%. We cannot describe the proportion and pattern of additional health and social care services provided as the project had only a hand-written ledger of referrals considered and no records to indicate which of these had been made and acted upon.

In both practices that went on to join the KWAH Project and those that did not, the average annual incidence of emergency admission to hospital among registered patients aged 75 or more in the period January–September 1999 approached one in five. Rates were slightly higher in the former group of practices, but not significantly so (rate ratio = 1.05; 95% CI 0.95–1.17), suggesting that data for the period after the start of KWAH are not subject to substantial 'volunteer bias'.

The data in Table 1 show that in the 37 months after KWAH began, average annual rates of attendance at A&Es by elderly patients of practices in H&F were approximately two in five and did not differ significantly in periods that were and were not covered by the project. Table 2 shows that rates of emergency admissions in the period October 1999–December 2002 had changed little compared with the preceding 9 months and did not differ meaningfully according to whether the patient's practice was or was not participating in the KWAH Project.

Discussion
We have demonstrated that a local health and social care initiative of the kind mandated by official government policy

Table 1. Patterns of attendance at A&E departments by elderly patients of practices that were, or were not, participating in the KWAH Project October 1999–December 2002

<table>
<thead>
<tr>
<th>Period</th>
<th>Events</th>
<th>Person-years</th>
<th>Rate per person-year</th>
<th>Rate ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Unexposed' to KWAH</td>
<td>12,401</td>
<td>30,820</td>
<td>0.402</td>
<td>1.0</td>
<td>–</td>
</tr>
<tr>
<td>'Exposed' to KWAH</td>
<td>2,472</td>
<td>6,044</td>
<td>0.409</td>
<td>1.02</td>
<td>0.97–1.06</td>
</tr>
</tbody>
</table>

Table 2. Patterns of admissions from or via A&E departments for elderly patients of practices that were, or were not, participating in the KWAH Project October 1999–December 2002

<table>
<thead>
<tr>
<th>Period</th>
<th>Events</th>
<th>Person-years</th>
<th>Rate per person-year</th>
<th>Rate ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Unexposed' to KWAH</td>
<td>6,275</td>
<td>30,820</td>
<td>0.204</td>
<td>1.0</td>
<td>–</td>
</tr>
<tr>
<td>'Exposed' to KWAH</td>
<td>1,212</td>
<td>6,044</td>
<td>0.201</td>
<td>0.98</td>
<td>0.93–1.05</td>
</tr>
</tbody>
</table>

aIncludes all person-time for elderly population of practices not participating in the KWAH Project, plus 'unexposed' person-time in participating practices.
bIncludes ‘exposed’ person-time in participating practices, allowing for a lag of 3 months after completion of the first EASY-Care assessment in each practice.

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has failed to achieve one of its key aims: a reduction in emergency admissions to hospital among patients aged 75 years or more. A randomised controlled trial in Australia recently reported a similar result in relation specifically to admissions to hospital [6]. The approach used in our evaluation was the cohort equivalent of the intention-to-treat analysis recommended for randomised controlled trials. It determined whether participation by a general practice, rather than an individual, in the KWAH Project was associated with a reduced rate of emergency attendances and admissions to hospital. This is a demanding standard to have applied, but it is the appropriate one for assessing the impact of broad policies.

The failure to enumerate carefully the population eligible to participate in KWAH was the first of several major difficulties encountered in evaluating the project. Overall, it may have acted as a bias towards the null, through inflating apparent denominators to a comparable extent in both participating and non-participating practices. Defining these denominators appropriately highlights a systematic problem in achieving the 'joined up working' between health and social services envisaged by KWAH and by the national policy more generally. With co-terminosity between local boroughs and PCTs, patients of practices joining such schemes who themselves live outside the relevant local government boundary will always be denied eligibility. Creation of such 'care orphans' represents a new form of 'postcode lottery'.

Other shortcomings in the implementation of the project included omission of one item from the Sherbrooke Questionnaire in certain practices, presentation of the items in a different order in different practices, failure to record responses to individual items, and large proportions of incomplete records from the EASY-Care assessment and associated histories of falls and medications, despite both of the latter being the subject of other standards within the national policy. In addition, data on the frequency and pattern of additional services provided as a result of screening could not be extracted from records maintained by the project, and no provision had been made for recording data relevant to several of the stated aims of the initiative. KWAH is presently revising its approach in the light of our findings.

The limited coverage (32%) by the second-phase screening assessment is almost certainly a key factor contributing to our failure to demonstrate an impact of the KWAH Project. Because coverage in the first-phase screen (61%) was modest in relation to targets set for other preventive programmes such as vaccination or cervical cytology, the overall prevalence of 'at risk' status was inflated to 75% through non-response to the Sherbrooke Questionnaire marking an individual out for a home visit. Working from this prevalence, were KWAH to be implemented across the whole PCT, the first cycle of screening would entail close to 6,000 home visits, or, at three visits per day, nine full-time-equivalent community nursing years. This calculation makes no provision for administrative support, delivery of additional services or re-screening in subsequent years. However, it raises the question as to whether it is reasonable to expect PCTs to deliver the kinds of services mandated by the national policy without providing them with a substantial increase in resources.

Qualitatively, in the KWAH Project we have observed well-intentioned, hard-working staff trained in responsive care for individuals struggling to come to grips with the challenges inherent in the organisation and delivery of anticipatory care for a whole population. Such initiatives are likely to require specialist public health input into their design and implementation, as well as their evaluation, if they are to succeed. Even were the challenges to be overcome, questions remain as to the choice of tools, as the Sherbrooke Questionnaire appears to be a derived set of items that had not been validated in its own right as a screening instrument, while we can find nothing in the peer-reviewed literature to support use of the EASY-Care assessment as a base for planning of supportive and effective health and social care. Thus, we have significant concerns that at least some of the nationally mandated standards are not adequately supported by rigorous evidence as to their value.

Acknowledgements

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Key points

- Surveys of elderly, community-dwelling patients reveal important levels of prevalent morbidity and disability.
- Existing disability is a predictor of further medical problems and declining independence in older people.
- This study showed that, despite being mandated by official policy, systematic screening of community-dwelling, elderly people for disability, coupled with provision of additional health and social care services did not reduce emergency attendances at, or admission to, hospital in one London PCT.

Policy implications

Health professionals trained in responsive care for individuals may struggle to establish and run anticipatory and preventive services for whole communities. Such initiatives are likely to require specialist public health input into their design and implementation, as well as their evaluation, if they are to succeed.

Competing interests

None.
Prevalence of cognitive impairment: results from the MRC trial of assessment and management of older people in the community

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Abstract

Background: Cognitive impairment is an important part of the diagnostic criteria for dementia. The Mini-Mental State Examination (MMSE) is recommended to test for cognitive impairment and to monitor medication response.

Objectives: We examined the prevalence of cognitive impairment in the UK and assessed associations with cognitive impairment.

Design: Cross-sectional survey as part of a cluster randomised trial.

Subjects: Representative sample of people aged 75 years and over.

Methods: All subjects had a detailed baseline health assessment including the MMSE.

Results: A total of 15,051 subjects completed the assessment (71.9%). Almost two-thirds of subjects were female (61.5%) and almost half were aged between 75 and 79 years (47.0%). The prevalence of cognitive impairment was 18.3% (95% confidence intervals (CI) = 16.0–20.9) at a cut-off of 23/24, and 3.3% (95% CI = 2.8–4.0) at 17/18. Those with impairment (MMSE 23/24) were significantly more likely to have hearing (odds ratio (OR) 1.7), vision (OR 1.7) and urinary incontinence problems (OR 1.3), have two or more falls in the previous 6 months (OR 1.4), and report poorer health (OR 1.9). Almost half the participants lived alone (n = 7,073; 47.0%) and of these almost one-fifth were impaired (MMSE 23/24; 19.4%).

References


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