

Research paper

Case management by nurses in primary care: analysis of 73 'success stories'

Glyn Elwyn BA MB BCh MSc FRCGP PhD

Professor of Primary Care Medicine, Department of Primary Care and Public Health, Cardiff University, Cardiff, Wales, UK

Meryl Williams BSc SRN RM SP

Advanced Primary Nurse

Catherine Roberts BN (Hons) RGN

Chronic Conditions Manager

Swansea Local Health Board, Swansea, Wales, UK

Robert G Newcombe PhD CStat FFPH

Professor, Department of Primary Care and Public Health, Cardiff University, Cardiff, Wales, UK

Judith Vincent BSc Pharm MRPharms

Deputy Director of Clinical Development, Swansea Local Health Board, Swansea, Wales, UK

ABSTRACT

Background There is interest as to whether case management reduces unplanned patient admission to hospital. However, very little is known about how the intervention is delivered and what the most salient outcome measures are.

Design Qualitative study embedded in a wider evaluation.

Setting Primary health care.

Method Analysis of case manager case reports in a service innovation evaluation study.

Results Case management provides home-based care to frail elderly patients using a process of assessment and medication review. This often leads to new diagnoses, to the co-ordination of further care and the tailoring of services to suit the needs of individuals. The benefits reported are complex and relate to improving a patient's quality of life more than the prevention or otherwise of admission to

hospital. The type of attention provided by these roles seems to be absent from current NHS arrangements. The role enables time to be spent assessing the individual needs of patients who live at the margins of independent living.

Conclusion The case managers describe having the time and the skills to assess a mix of clinical and social problems, and then accessing the correct networks to help elderly people with multiple illnesses navigate a complex system of providers. More weight should be given to the ability of this intervention to result in improved quality of life for patients, and to the investigation of costs and benefits.

Keywords: advanced primary care nurses, case management, emergency admissions, unplanned admissions

How this fits in with quality in primary care

What do we know?

There is sustained interest in providing case management to 'at-risk' patients as a way of potentially reducing unplanned admission to hospitals. There is, however, no agreement that the strategy is effective in different healthcare systems. In addition, very little is known about the work actually undertaken by case managers: how does case management help patients and what are the most salient outcomes?

What does this paper add?

Case management by nurses provides a type of care to frail elderly patients based on a diligent process of assessment and medication review, often leading to new diagnoses and to the co-ordination of further care and services tailored to the need of the individuals. The type of attention provided by case managers in these roles seems to be absent from current NHS arrangements. The role enables time to be spent assessing the complex needs of patients who live at the margins of independent living. Although it could be argued that many of these roles could have been provided by existing community nurses, it is clear from these accounts that the case manager role is regarded as enabling innovative nursing practice.

Introduction

There is sustained interest in providing case management to 'at-risk' patients as a way of potentially reducing unplanned admission to hospitals. There is, however, no agreement that the strategy is effective in different healthcare systems. In addition, very little is known about the work actually undertaken by case managers: how does case management help patients and what are the most salient outcomes? Health maintenance organisations (HMOs) in the US, such as Evercare and Kaiser Permanente, have claimed that case management, supported by intensive domiciliary nursing when required, have proved to be cost-effective and have led to decreased rates of hospital admissions.¹ Naturally, faced with ageing populations and high levels of unplanned admission, other healthcare systems, such as the NHS, have been very interested in replicating these results.

The evidence that case management can be adapted to different settings and yet remain an effective intervention is not yet available. The most specific recent overview of case management was undertaken by Hutt *et al.*² It concluded that the evidence for the effectiveness of case management in preventing hospital admissions to acute care in elderly patients was weak and often contradictory.² Interestingly, the results of a large-scale evaluation conducted by the National Primary Care Research and Development Centre have indicated that the hoped for reduction in unplanned admissions to hospital is not likely to accrue in the model recently introduced into the UK.³ Although home-based support for older people is not equivalent to case management in terms of the specific services provided, a systematic review of this intervention did not lead to an impact on hospital admission either.⁴

Nevertheless, it is clear from reports in the popular press that case management has caught the imagination of those who hope to tackle rising demand in unplanned hospital admissions.⁵ Indeed, the community matron policy implemented in England seems to have been predicated on the assumed benefits of case-management processes.⁶ Yet, although there is as yet no clear evidence that case management reduces

unplanned hospital admissions, substantial enthusiasm exists at both policy and, more importantly perhaps, operational levels. This is surprising and leads to the consideration that there might be added value in these schemes, value that lies beyond having an impact on admissions – in other words, that case management may well address, perhaps for the first time, a care gap that exists for vulnerable elderly people. However, evaluations undertaken to date do not consider this issue in depth, nor do they describe the working practices involved in delivering case management in an NHS context.

We therefore set out to investigate this issue in more detail in order to determine an 'insider view' of the case-management role. We wanted to know how case managers describe their work and how they perceived benefits for patients and for other service providers: in short, to outline how they had 'made a difference'. To achieve this aim, nurses in a case-management project were asked to provide accounts of patient interactions that had been considered 'success stories'.

Method

This is a qualitative study, undertaken as part of a wider evaluation. The project was designed by the Swansea Local Health Board to implement nurse case management in primary care. Case manager nurses were allocated to five volunteer practices and the work started in April 2005. The aim of the overall project was to reduce, if possible, from an agreed sample of practices, the number of unplanned medical admissions referred to the Swansea NHS Trust's group of hospitals. This aim was operationalised by employing five individuals who were named, adopting Evercare terminology,¹ 'advanced primary nurses' (APNs). Their objective was to work with selected caseloads of patients from designated practices, with the goal of preventing unplanned admission or re-admission. Detailed descriptions of the practice- and patient-selection processes are provided elsewhere.⁷ In summary, the choice of patients was determined by

a combined method of firstly assessing previous admissions, and secondly by practice teams nominating patients who they felt were at high future 'risk' of unplanned admission to hospital.

The nurses were recruited after advertisement in local practices and regional newspapers: the details encouraged experienced nurses who wished to take on autonomous roles in the co-ordination of care. Recruitment and training plans ensured that appointees were provided with an 8-week induction. During this induction, classroom teaching and visits to patients and practices were scheduled. Input was planned from clinical colleagues in specialties such as care of the elderly, palliative care, rheumatology and pharmacology. Visits were organised to relevant personnel in voluntary agencies, social services, intermediate care and rehabilitation units. Details are provided in a separate publication.⁸

At the end of the study, each nurse was asked to review their caseload to categorise each patient as follows: a, death; b, hospitalisation; c, deterioration; d, no benefit; e, benefit with no hospitalisation or death during the study period.

During the study, the APNs were also asked to write about the cases they considered to be 'success stories'. Specifically, they were asked to keep notes where they felt their intervention had resulted in tangible benefits, sufficiently notable to share with others in order to gain increased understanding about the new role. A one-page template was provided, divided into headings: 1, summary of patient symptoms or problems; 2, brief assessment notes; 3, management plan; and 4, a summary of the eventual outcome. The nurses were asked to write about cases where they felt they had made a significant impact on patient care. For instance, they might have felt that admissions were definitely or potentially avoided by their contact, or that medication review or increased co-ordination of other services had directly led to patient or carer benefits. These success stories were collected and discussed during weekly team management meetings. The handwritten 'success stories' were collected and prepared for analysis.

The 'success stories' were collected, typed and analysed by allocating each one to a thematic group according to the main action taken by the practitioner. For instance, if the assessment led to a referral, this was noted as the main action. If the assessment was best described as a 'case review' coupled with 'care co-ordination', this action was noted and so on. The overall intent was to describe a minimum level of categories. Short notes were made on each case to allow thematic groupings of similar cases to be identified.

Results

Five APNs were appointed (4.5 full-time equivalents) from a field of nine candidates. They were selected on the grounds that they fulfilled the essential criteria of the job description and, in addition, showed enthusiasm for developing their skills as autonomous practitioners. They were appointed in January 2005 and entered training until the initiative started in April 2005. Two of the APNs were recruited from general practice nursing and three from hospital settings. Weekly meetings were held in which case-selection and case-management difficulties were shared and discussed.

The total number of patients consented and placed on case-management caseloads was 121. This number represents the overall caseload taken on by the five nurses over the 12-month study. One nurse left the project during the study and her case load was transferred to a new appointee. Caseloads per nurse were as follows: CJ 40 patients, MW 34 patients, JT 19 patients, JR (later DT) 17 patients, HB 11 patients. Categorisation by the nurses of patients into the categories of a, death; b, hospitalisation; c, deterioration; d, no benefit; and e, benefit, is provided in Table 1. Note that the APNs noted 18 deaths (15%) in a caseload of 121 patients and that 13 (11%) in their view had derived no benefit: 26 (22%) had been admitted to hospital, but the largest group of patients (64, 53%) had, in their view, benefited from case management. They felt that their interventions had not led to deterioration by any patient.

From this overall caseload of 121 patients, 73 'success stories' were collected during the year, indicating that the nurses felt they had made a significant positive difference for over half the patients on their caseloads. The following criteria for documenting 'success stories' had been agreed as the case-management processes developed: firstly, where an improvement was achieved (e.g. improved blood pressure control or a reduction in patient distress); secondly, where effective liaison with other agencies occurred (e.g. social services reacting promptly to provide home care or respite care); and thirdly, where patients and their carers had acted on information provided to manage problems more effectively. Discussion of these accounts was the main agenda item on a weekly team management meeting. They served as examples of how the nurses were responding to, and dealing with, the complexities confronting their new roles.

The mean age of the selected patients for case management was 79 years (range 59–96 years). Forty-two of the 73 patients (58%) were female and

Table 1 APN caseload categorisation

APN	Patients consented	(a) Death	(b) Hospitalisation	(c) Deterioration (CI)	(d) No benefit	(e) Benefit with no hospitalisation, or death (CI)
CJ	40	6	9	0	6	19
JT	19	3	5	0	2	9
MW	34	6	3	0	4	21
HB	11	1	4	0	0	6
JR/DT	17	2	5	0	1	9
Totals	121	18	26	0 (0–3%)	13	64 (44–62%)

CI, confidence interval

46 of 73 (63%) lived alone. One acute admission was described (case 9), namely a 72-year-old woman with chronic obstructive pulmonary disease (COPD) who had suddenly become breathless. The case manager asked for an emergency assessment and the patient was admitted urgently. All the other success stories could be placed in one of four other thematic groups, namely:

- 1 assessment and co-ordination of care
- 2 diagnosis and co-ordination of care
- 3 admission to non-acute bed
- 4 terminal care facilitated.

Table 2 details the number of accounts in each category.

Table 2 Thematic analysis of case management 'success stories' ($n = 73$)

Theme	Number of accounts provided
Assessment and co-ordination of care	35
Diagnosis and co-ordination of care	29
Admission to non-acute bed	5
Terminal care facilitated	3

Theme 1: assessment and co-ordination of care

The majority of the accounts (35 cases) were descriptions of cases where the nurses had reviewed the

patients' needs, particularly around the use of medication, and assessed their needs for support from the local pharmacy or social services. In over half of these 35 cases, adherence to a complex regime of medication was the main problem. Typical solutions were the introduction of solutions such as simplified regimes, support and education of patients and carers, or technological support, such as NOMAD trays (drug compliance aids). One 84-year-old woman (case 33) with asthma and diabetes, severe osteoarthritis and polymyalgia rheumatica had been given two types of asthma inhalers, each with activation techniques. One device was therefore provided, which was simpler for the patient to use.

In almost all cases, other factors in addition to medication review played a part in the problem assessment. The accounts describe individuals who had complex needs best addressed by co-co-ordinating a range of local, social, primary and secondary care providers. Two similar cases illustrate this type of work undertaken by the case managers:

Case 22: 96-year-old male requiring anticoagulant monitoring

This patient lived alone and had poor sight: his daughter lived away. He had diabetes mellitus, atrial fibrillation and hypertension and was being prescribed warfarin, as well as other medications. Although international normalised ratio (INR) tests were being done to monitor the degree of anticoagulation, advice about adjusting the warfarin dose was being posted to his home. However, as he was unable to read the advice and his control was poor, this placed him at significant risk of bleeding. The case manager arranged for the results to be telephoned to the patient and arranged more frequent blood tests at which his dosing plan and adherence was monitored more closely.

Case 36: 89-year-old female requiring anticoagulant monitoring

This patient was blind, lived alone and had been diagnosed as having ischaemic heart disease and heart failure. She was reportedly spending over £100 per month on taxi fares to attend for blood tests as she was on warfarin. The case manager felt this was inappropriate and arranged for blood tests to be done at home by the community nursing services.

The patients described were almost invariably having difficult with mobility. Case 12 was an 89-year-old female who lived alone and was unable to get out independently. Although she had diabetes she had not received any diabetic checks for 3 years. The case manager found that she had high blood pressure. Medication was started and a NOMAD tray arranged.

Six cases provide graphic accounts of another set of problems – the lack of careful handover arrangements for patients discharged from hospital. Two cases are described of elderly patients put at risk because of poor discharge planning. One 71-year-old woman (case 16) with depression was severely distressed and had no arrangements for review. An 83-year-old man (case 63), having been admitted with acute confusion, caused by an exacerbation of COPD, had taken his own discharge. However, partly due to the speed of discharge, no arrangements had been made for follow-up, and urgent arrangements were required to ensure his safety at home. Similarly, there were two examples of patients discharged after recent strokes with no rehabilitation arrangements. One patient, aged 77 (case 66), was discharged with swallowing difficulties. A patient aged 85 (case 19), who had speech loss, was described as becoming ‘frustrated’ after spending a few days at home, to the point of becoming ‘unmanageable’. In these situations, case manager support was reported to have avoided re-admission to hospital.

In almost all accounts, the case manager liaised with other services to call upon extra services. Some accounts specifically describe formal referrals to other services. For example, one 83-year-old man with increasing mobility problems due to Parkinson’s disease was referred to a residential rehabilitation unit (case 51), another to Cruise for grief counselling (case 3), and another to the Expert Patients Programme (case 2). An 80-year-old patient (case 54), who was suspected of having myasthenia gravis, had been waiting for many months for a diagnostic procedure. The procedure was expedited within 2 weeks. Another 80-year-old patient (case 55), having waited for many months for a neurological opinion, was rapidly prioritised. While these examples did not result in avoided admissions, they illustrate the advocacy role assumed by the case managers.

Theme 2: diagnosis and co-ordination of care

There were 29 accounts recorded where new diagnoses were described and where additional care services were arranged or co-ordinated. The majority of these cases related to either cardiovascular (9 cases) or respiratory system problems (7 cases). In these cases, changes to medication regimes are described – such as increased doses of diuretics, increases in angiotensin converting enzyme inhibitors, or more instruction in the use of inhalers and nebulisers. Among the nine cardiovascular cases were three patients where digoxin toxicity was considered and confirmed. The case managers also noted instances where potentially serious errors were observed and consequences averted. One patient was noted to have been incorrectly prescribed two forms of beta-blockers and another found to have a very low level of haemoglobin while concurrently prescribed non-steroidal anti-inflammatory drugs and aspirin. Yet another patient with tremors and a tachycardia was noted to be taking inappropriately high dosages of a combined short-acting inhaler (Combivent).

There were three accounts where urinary tract infections were identified and treatment organised. All were elderly women with numerous co-morbidities, two of them lived alone. Case 26 (see below) indicates how the case manager avoided an acute hospital admission by working with a social worker to organise a respite care bed and a care package in time for her return home.

Case 26: 93-year-old female with urinary tract infection

This patient lived with her son, who was in full-time employment. She had developed confusion: for two days before assessment she had not been eating or drinking as normal. A diagnosis of urinary tract infection was made and the problem treated. In addition, to avoid acute hospital admission, extra social services support was organised until a respite care bed was found in the community.

Case 11 provides a noteworthy account of a crisis averted: a 75-year-old female, living alone, had multiple urgent unplanned admissions due to an electrical problem at home. She panicked when her nebuliser had no power supply. The case manager intervened by organising an electrician to fix her electrical problem and as back-up, arranged a battery-powered nebuliser. No further unplanned admissions were recorded.

Theme 3: admission to non-acute bed

Among the 73 accounts, six described admissions to non-acute beds: three, aged 75, 81 and 82 years, were described as having heart problems. Two 75-year-old

patients were described as having exacerbations of chronic obstructive airways disease: one was admitted to a community 'winter bed' and the other to a 'nursing home'. Case 26 (see above) was a 93-year-old who developed a urinary tract infection and was found a respite bed.

Theme 4: terminal care facilitated

Three cases are described where the case manager facilitated terminal care at home. An 82-year-old woman in end-stage respiratory failure wanted to stay at home in the company of her husband and family (case 1); a 68-year-old woman with lung cancer (case 24) was supported to explore her, and her husband's, preferences, before eventually accepting the help of a community-based palliative care team. A 77-year-old man with prostate cancer deteriorated rapidly and required the support of the case manager to co-ordinate an overnight carer rota that included district nurses and home carers from both local services and Marie Curie.

Synthesis

The accounts provided by the five nurses provide insight into the perceived roles and implemented work practices of case managers. There is no doubt that the nurses were acting in advanced clinical capacities. The accounts do not explicitly indicate that the nurses requested confirmation by medically qualified practitioners when new diagnoses were made – although there are parallel reports to substantiate that they worked in close liaison with medical colleagues. Nevertheless, the accounts describe assessments indicative of autonomous generalist nursing practice, showing a case manager's ability to work independently and, where needed, to take decisions to liaise with others. In summary, the case managers account for themselves as acting in the capacity of clinical decision makers working in the context of the patients' home and social environment.

The APNs undertook a medication review as one of their core assessment tasks. The resulting queries led to significant interactions with general practitioners (GPs) and pharmacists. It is striking that accounts of potentially serious errors were managed, indicating that the APNs were assuming a role that provided them with the status and responsibility to declare and intervene in such circumstances.

In short, the 'success stories' describe the emergence of autonomous generalist nurse-clinicians, who review medication, make suggestions for changes, arrive at diagnosis, instigate investigations, judge priorities and make recommendations. Case managers take on

the explicit role of working at the patient's home to assess the risk of requiring urgent medical care. They give accounts of themselves as 'educators' and 'fixers' – having the ability to find solutions by calling on NHS providers, social and voluntary services, and, if they exist, supporting family or friends. In addition, and by virtue of their special place at the interface of primary and secondary care, they manage the 'care gap'⁹ – the difficult transition between hospital and home – to ensure that providers address the task of planning continuity of care. In summary, these nurses describe accounts where they see themselves as having the time and the skills to assess a mix of clinical and social problems, and then access the correct networks to help elderly people with multiple illnesses navigate a complex system of providers.

Discussion

Principal findings

Case management by nurses based in primary care provides a type of care that is not currently available to frail elderly patients: care that is based on a diligent process of assessment and medication review, often leading to new diagnoses and to the co-ordination of further care and services tailored to the need of the individuals. This type of attention seems to be absent from current NHS arrangements. The role enables time to be spent assessing the complex needs of patients who live at the margins of independent living. Although it could be argued that many of these roles could potentially have been provided by existing community nurses, it is clear from these accounts that the case-manager role is regarded as enabling innovative nursing practice.

Strengths and weaknesses of the study

The findings are based on a selected set of accounts and the cases in turn represent a specifically chosen sample of patients. We acknowledge the presence of reporting bias: the nurses would be careful to portray their work in a good light. The accounts also represent the work of enthusiastic pioneers who elected to work as autonomous nurse clinicians in primary care. We nevertheless contend that the accounts provide insights into working practices that cannot be discerned in quantitative studies that focus on event rates. We feel that the strength of the study lies in the veracity of the detailed accounts of cases chosen for discussion at weekly team meetings.

Results in context

We were unable to find studies that have examined this new area of practice using qualitative methods, although we are aware of an in-depth mixed method evaluation of the Evercare pilots in England.³ Their internal report corroborates our findings: case managers undertake a wide range of activities and adopt a generalist approach by tackling undifferentiated problems in primary care.¹⁰ It seems that case management may well be an attempt to rise to the challenge posed by Rothman's and Wagner's warning that the 'future of primary care ... may depend on its ability to successfully redesign care systems that can meet the needs of a growing population of chronically ill patients'.¹¹

Implications

The introduction of nurses, located in the primary care sector, who act as case managers leads to the development of new interfaces with existing health professionals. These accounts provide a positive account of working relationships, but there are implications for existing professional roles. Should case managers be employed by practices, by primary care management organisations or by hospitals? The challenge for the NHS will be to find employment models that support training, and continuing professional development and to integrate case management, if it is supported by future investment, into existing service arrangements.¹¹

The management of chronic disease and multimorbidity in the frail elderly population is an increasing challenge for the NHS and for primary care in particular. In addition, the recent separation in the UK of 'out of hours' from 'office hours' care has led to increased fragmentation, less continuity and less access to the GP-held medical record. Faced with the 'tyranny of the urgent',¹³ the provision of case management for people who have complex clinical problems, difficulties with their mobility and fragile personal and social support networks seems to be a neglected area of care and one that is in need of much more research.¹⁴

Many issues remain unresolved regarding case management as implemented in the UK, and there has been very little work that has compared costs to benefits. On the basis of a small number of empirical studies to date,^{15,16} it is difficult to gauge the impact of case management on unplanned hospital care. If reduction in unplanned admissions remains the most valued outcome measure, then, on current evidence, it is doubtful whether case management will receive sustained future investment. These first-hand accounts from the actual case managers, however, indicate that avoiding admission is not necessarily the most sensitive indicator of success or of best care. Expediting an

admission could well be best for patients. We raise the possibility as well that admission is the wrong measurement – that more weight should be given to the ability of case management to deliver co-ordinated packages of care that result in improved quality of life for patients. These success stories point to the clear perceptions that this was the main benefit for patients and their carers, and not decisions for or against admission. This qualitative study indicates that there is a need to document the benefits at the patient level in more detail and to gauge whether or not the 'success stories' described here would be attainable using other care models, such as a re-configured community nurse service.^{17,18}

FUNDING

Swansea Local Health Board.

ACKNOWLEDGEMENTS

We thank the following members of the Study Steering Group: Jan Worthing (chair), Wyn Harris, Debbie Cashmore, Liz Smith, Anne Norton, Jane Hopkins, and Anita Griffiths and the advanced primary nurses: Helen Bowler, Craig Jones, Jonathan Thomas, Deborah Thomas and Jackie Rose.

REFERENCES

- 1 Kane R and Huck S. The implementation of the Evercare demonstration project. *Journal of the American Geriatric Society* 2000;48:218–23.
- 2 Hutt R, Rosen R and McCauley J. *Case Managing Long-term Conditions*. London: Kings Fund, 2004.
- 3 Gravelle H, Dusheiko M, Sheaff R *et al*. Impact of case management (Evercare) on frail elderly patients: controlled before and after analysis of quantitative outcome data. *BMJ* 2006;334:109.
- 4 Johri M, Beland F and Bergman H. International experiments in integrated care for the elderly: a synthesis of the evidence. *International Journal of Geriatric Psychiatry* 2003;18:222–35.
- 5 Cochrane D and Fitzpatrick S. Are they really on the case? *Health Service Journal* 2005;115:32–3.
- 6 Department of Health. *Caring for People with Long Term Conditions: an education framework for community matrons and case managers*. London: Department of Health, 2006.
- 7 Hughes D, Cashmore D, Newcombe R *et al*. *Evaluation of the Advanced Primary Nurse Case Management Project in Swansea: a controlled study assessing the impact on unplanned hospital admissions*. Cardiff: Cardiff University, 2006.
- 8 Kowalczyk J and Elwyn G. *Interviews with Nurses doing Case Management for the Frail Elderly: on the edges of a 'black hole'*. Cardiff: Cardiff University, 2006.

- 9 Cook RI, Render M and Woods DD. Gaps in the continuity of care and progress on patient safety. *BMJ* 2000;320:791–4.
- 10 Boaden R, Dusheiko M, Gravelle H *et al*. *Evercare Pilots in England: Final Report*. Manchester: National Primary Care Research and Development Centre, University of Manchester, 2006.
- 11 Rothman AA and Wagner EH. Chronic illness management: what is the role of primary care? *Annals of Internal Medicine* 2003;138:256–61.
- 12 Weiner K, Hughes J, Challis D *et al*. Integrating health and social care at the micro level: health care professionals as care managers for older people. *Social Policy and Administration* 2003;37:498–515.
- 13 Gerlach FM, Beyer M, Muth C *et al*. New perspectives in the primary care of the chronically ill – against the ‘tyranny of the urgent’. Part 1: chronic diseases as a challenge for primary care. *Zeitschrift für ärztliche Fortbildung und Qualitätssicherung* 2006;100:35–43.
- 14 Challis D and Hughes J. Frail old people at the margins of care: some recent research findings. *British Journal of Psychiatry* 2002;180:126–30.
- 15 Gravelle H, Dusheiko M, Sheaff R *et al*. Impact of case management (Evercare) on frail elderly patients: controlled before and after analysis of quantitative outcome data. *BMJ* 2007;334:31–4.
- 16 Huws D, Cashmore D, Newcombe R *et al*. Impact of case management by advanced practice nurses in primary care on unplanned hospital admissions: a controlled intervention study. *BMC Health Service Research*, 2008.
- 17 Doherty L. Modernisation is key to survival of district nursing. *Nursing Times* 2006;102:11.
- 18 Derret C and Burke L. The future of primary care nurses and health visitors. Increasing fragmentation threatens the primary healthcare team. *BMJ* 2006;333:1185–6.

CONFLICTS OF INTEREST

None.

ADDRESS FOR CORRESPONDENCE

Professor Glyn Elwyn, Department of Primary Care and Public Health, Cardiff University, Neuadd Meirionnydd, Heath Park, Cardiff CF14 4YS, UK. Tel: +44 (0)29 20687195; fax: +44 (0)29 20867219; email: elwyng@cardiff.ac.uk

Received 31 August 2007

Accepted 15 October 2007