Ageing & Society **30**, 2010, 125–155. © Cambridge University Press 2009
doi:10.1017/S0144686X09990183

Case management for long-term conditions: implementation and processes

SIOBHAN REILLY*, JANE HUGHES† and DAVID CHALLIS†

ABSTRACT
This paper presents a structured literature review that focused on comprehensive case management by nurses for adults with long-term conditions living in the community. The emphases of the review are the implementation of case-management approaches, including its roles, core tasks and components, and the coverage and quality of the reported implementation data. Twenty-nine studies were included: the majority were concerned with case management for frail older people, and others focused on people with multiple chronic diseases, high-cost patients, or those at high risk of hospital admissions. All the studies reported that case managers undertook the core tasks of assessment, care planning and the implementation of the care plan, but there was more variation in who carried out case finding, monitoring, review and case closure. Few studies provided adequate implementation information. On the basis of the reviewed evidence, three issues were identified as key to the coherent and sustainable implementation of case management for people with long-term conditions: fidelity to the core elements of case management; size of caseload; and case-management practice, incorporating matters relating to the continuity of care, the intensity and breadth of involvement, and control over resources. It is recommended that future evaluations of case-management interventions include a comprehensive process component or, at the very least, that interventions should be more fully described.

KEY WORDS – nurse case management, long-term condition, community care, implementation, literature review.

Introduction

Case management in social and health care originated in North America as part of the shift from institutional to community-based provision (Beardshaw and Towell 1990; Challis 1992, 1994, 2003; Fisher 1990–91; Huxley *et al.* 1990). Its development was linked to the search for cost-effective alternatives for people with complex needs who required

* National Institute for Health Research School for Primary Care Research, University of Manchester, Manchester, UK.
† Personal Social Services Research Unit, University of Manchester, Manchester, UK.

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

long-term care (Davies and Challis 1986). Moxley (1989) suggested that six factors underpinned the development of case management: deinstitutionalisation; the decentralised nature of community services; the growing number of clients with multiple needs living at home and the fragmentation of care services; a growing awareness of the importance of social supports and carers; and the need for cost containment. Although there are many variants, case management has been defined as 'an intervention using a human service professional (typically a nurse or social worker) to arrange and monitor an optimum package of long-term care services' (Applebaum and Austin 1990: 5). Challis *et al.* (1995, 2002) proposed a multi-faceted definition of case management on the basis of: functions (co-ordination and linkage); goals (maintaining vulnerable people at home and their independence); core tasks (case finding, assessment); target group; differentiating features (intensity of involvement, breadth of services overseen, duration of involvement); and multi-level responses (client-level and system-level goals). The Case Management Society of America underscores the individual and system-level objectives by describing the procedure as 'a collaborative process of assessment, planning, facilitation and advocacy for options and services to meet an individual's health needs through communication and available resources to promote quality cost-effective outcomes' (*see* http://www.cmsa.org).

More recently, case management has been adopted in acute health care with the same goal of cost containment. For example, the Chronic Care Model, an evidence-based guide to higher-quality chronic illness management in primary care (Bodenheimer, Wagner and Grumbach 2002; Wagner 1998) that originated in the United States of America (USA), describes the changes that are required in the health-care system to enable primary-care settings to improve outcomes for patients with chronic illnesses. It has six components: community resources; patient self-management; decision support; delivery system redesign, which includes case management; the use of clinical information systems; and the wider health-care system (Shortell *et al.* 2004). The model predicts that improvement in the aforementioned components can produce system reform in which informed, activated patients interact with prepared, pro-active practice teams (Bodenheimer, Wagner and Grumbach 2002; Rothman and Wagner 2003). Despite its international relevance (Ashton 2000; Department of Health 2005*a*, 2005*b*; Dixon *et al.* 2004; Hofmarcher, Oxley and Rusticelli 2007; Hokenstad and Johansson 1996; Johri, Beland and Bergman 2003; Landi *et al.* 1999; National Health Priority Action Council 2006), the process or implementation of the delivery of case management has rarely been explored in depth (Lamb 1992). There is confusion about the target groups, programmes and services that comprise

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

case management, and how these differ in other care-delivery models (Lyon 1993).

Aims of the review

The purpose of the review reported in this paper was to explore the implementation of comprehensive case management by nurses for people with long-term or chronic illnesses, in part to provide a starting point for new research. This is particularly apposite in England where a system of case management for those with the most complex chronic illness was established with the target of a five per cent reduction in hospital bed-days by 2008 (Department of Health 2005*a*). It has been estimated that there are around 250,000 'very high-intensity users' eligible for case management, and that 3,000 community matrons would be required to manage them (Department of Health 2005*b*). Despite its wider adoption, the evidence for the effectiveness of case management in this context is inconsistent (Singh 2005*a*; Hutt, Rosen and McCauley 2004), and there is none showing that any one case-management intervention is consistently better than another. There were two more specific aims:

1. To provide a consistent and comprehensive, description of the purpose, content and delivery of case-management services.
2. To illustrate how the consistent and comprehensive reporting of the implementation of nurses' case management can identify specific areas that require methodological development.

The review methodology

The review focused upon comprehensive case management (*i.e.* not just case finding or assessment) by nurses for adults with long-term conditions or chronic diseases and resident in the community. Published empirical research was primarily identified through citation tracking of the papers identified by previous related systematic and narrative literature reviews that were available in 2005–6 (Eastwood and Sheldon 1996; Hallberg and Kristensson 2004; Hutt, Rosen and McCauley 2004; Johri, Beland and Bergman 2003; Kharicha *et al.* 2004; Loveman, Royle and Waugh 2003; Norris *et al.* 2002; Phelan *et al.* 2003; Raine *et al.* 2002; Renders *et al.* 2001; Richards and Coast 2003; Rosen and Teesson 2001; Rummery and Glendinning 2000; Singh 2005*a*, 2005*b*; Taylor *et al.* 2005; van Haastregt *et al.* 2000; Weingarten *et al.* 2002), supplemented with follow-up searches

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

TABLE 1. *Criteria for inclusion in or exclusion from the review*

	Inclusion criteria	Exclusion criteria
Participants	Adults with one or more long-term condition/chronic disease	Solely mental health service or palliative care service users
Country	Any (published in English language)	Hospital-based services/residential homes/mental health services
Dates	Data collected from 1980 onwards	Published prior to 1980
Design	Any empirical study	Non-empirical, non-peer-reviewed, grey literature
Location[1]	Community based	'Hospital discharge' interventions with a primary goal of shortening inpatient hospital stays
Delivery[1]	Comprehensive case-management interventions implemented by nurses (may have a disease-specific component) *and* either relatively small caseloads (intensive) *or* more than one service spanned (breadth)	Disease-specific models; predominantly telephone case management; intermediate care approaches; non-intensive client–case manager interaction (large caseloads) and breadth of services encompassed (few)
Duration[1]	Three months or more	Less than three months
Skill mix	Nurses and any other professional group	Solely professional groups other than nurses

Note: 1. Of the intervention.

of electronic journals. Inclusion and exclusion criteria were applied to each potential reference (Table 1). The retrieved papers were first read to establish that they referred to comprehensive case-management interventions. We operationalised the term 'comprehensive case management' by reference to three main differentiating features: intensive client–case manager interaction (relatively small caseloads) and/or the breadth of services encompassed (more than one service); and the duration of the case-management intervention (longer-term commitment lasting a minimum of three months) (Applebaum and Austin 1990).

The included publications described and evaluated 29 case-management schemes and are listed in Table 2. The content of the papers that met the inclusion criteria were reviewed using a data extraction form, on which was noted the general characteristics of the research, the professional group(s) and locations of the case managers, and the core tasks and components of the case-management interventions (Challis *et al.* 1995, 2002), including the methods of identifying high-risk patients.[1] We recorded whether or not the core tasks and components of the case-management interventions were implemented. One reviewer selected the studies and extracted data (SR). A second reviewer (DC) checked the extracted data for consistency and accuracy, and any disagreements were resolved by consensus. The procedures and steps of the review are summarised in Figure 1. References to the studies included in the review are

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

referred to in square brackets using the serial number given in Table 2. In a few cases, more than one publication reported the findings of a research project: these are readily distinguished by the authors and dates. Any other references are cited in the conventional manner. Two of the authors of this review (DC, JH) were co-authors of two studies in the review [11, 29].

The presented synthesis has six sections. First we present a broad overview of the characteristics of the studies in terms of the aims of the research, aims of the intervention, along with the professional group and location of case managers and the caseload sizes. The following five sections are a narrative synthesis (Mays, Pope and Popay 2005) of the evidence about the core tasks of case management, the management of illness within the case-management process, therapeutic interventions, the tasks associated with complex care co-ordination, and the overall quality of the presented details of the implementation. The paper ends with a critical appraisal of the methods of the review and a discussion of the key issues relevant to a coherent and sustainable implementation of case management for people with long-term conditions.

Characteristics of the interventions and the studies

Of the 29 case-management interventions included in the review, the majority (18) were for frail older people and others targeted people with multiple chronic diseases, a high cost of care, and a high risk of unplanned admissions (Table 2). Three studies were of nurse case management for people with heart failure or cardiovascular diagnosis [1, 6, 23]: all were initiated in hospitals and subsequently extended into the community. Most of the included studies were North American (15 schemes), and the others were conducted in England (nine), Italy (two), Scotland (one), Canada (one) and Hong Kong (one). The majority (22) of the studies focused on the effectiveness of services, and fewer (11) on the process of service delivery or how services were provided. Over one-quarter (eight) were concerned with cost effectiveness, and seven with which services were provided. Fourteen of the studies were randomised-controlled trials (RCTs) and 22 were multi-site studies.

Aims of the interventions

Many of the studied intervention programmes had both client-oriented and organisational goals. For example, one US demonstration project aimed to improve patient health as a means of reducing the use of

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

TABLE 2. *Summary details of the included studies*

Study	Country	Population/*Method of identification*	Design (research aims)	Aims of interventions	Skill mix (number)	Setting
1. Aadalen 1998	USA	Cardiovascular diagnosis/*Resource usage*	Quasi-experimental design/action research (1, 4)	Promoting continuity of health care across a one-year post-discharge cardiovascular episode	N (6)	Medical/health centres; primary care hospitals
2. Allen 1999	USA	Frail older people/*Population programme*	Retrospective database cohort study (1)	Co-ordinating services with focus on potential rather than actual problems	N (ns)	Home health agency
3. Audit Commission 1999	E	Mixed: majority 65+ years/*Mainly referrals*	Surveys, caseload review, data analysis (3, 4)	Organising and delivering care to support people to live in their homes for as long as possible	DN (ns)	NHS trusts/variable settings
4. Bergen 1997	E	Mixed/*Referral*	Surveys, in-depth case studies (3, 4)	Co-ordinating community care for people with complex health and social needs	DN (7)	Community teams
5. Bernabei *et al.* 1998	I	Frail older people living in community/*Recent resource usage*	RCT (1)	Integrating social and medical care with a case management programme	N (ns), SW (1), G (1)	Community geriatric evaluation unit
6. Blue *et al.* 2001; Stewart and Blue 2001	Sc	Patients admitted with heart failure/*Combination of functional impairment and resource usage*	RCT (1)	Reducing the morbidity and mortality related to chronic heart failure	NS (2)	Hospital
7. Boaden *et al.* 2005; Sargent *et al.* 2007	E	Older patients with multiple unplanned hospital admissions/*Resource usage*	Case study (1, 3)	Reducing hospital occupancy as a means of achieving waiting list and waiting time targets	APN (22–29)	Centrally, general practitioner surgeries or with other nurses
8. Boyd and Fisher 1996	USA	Chronically ill older adults/*Combination model*	Controlled study (1)	Increased continuity, decreased duplication and enhanced quality of care; reducing waste	N (1)	Community hospital
9. Brown *et al.* 2003	E	Frail older people/*Referral*	Non-random comparative design (1)	Meeting the needs of older people and their carers	SW^{+A}, OT^{+A}, DN (ns)	Large fund-holding practices

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

10. Brown *et al.* 2004, 2007; Chen *et al.* 2005	USA	Multiple chronic conditions targeted[1]/ *Algorithm*	RCT; surveys (1, 3)	Improving patient health to reduce use of emergency rooms, inpatient hospital services, and other acute care services	RN (64; range 5–17)	Hospital
11. Challis *et al.* 2002	E	Older people at risk of admission to LTC/*Functional impairment*	Outcome/process evaluation (1, 2, 3)	Preventing admissions to LTC. Providing support to carers	N (1), P (1), SW (2), RCM (1).	Primary health care
12. Dorr *et al.* 2005	USA	Multiple groups (diabetes diagnosis 27% selected for this study)/*Referral*	Retrospective matched cohort study (1)	Team collaboration, general patient education, adoption of multiple guidelines, continuity, regular follow-up	RN/SW (7)	Ambulatory clinic
13. Enguidanos *et al.* 2003	USA	Frail older people/*Combined population programme, recent resource usage, functional impairment*	RCT (1, 2)	To lower medical costs, improve satisfaction with care, increase care plan adherence, and improve QoL	RN/SW (2)	Medical centre
14. Fitzgerald *et al.* 1994	USA	Patients with a high risk of readmission/*Recent resource usage*	RCT (1)	Meeting patient's multiple needs, improved access to care, patient education; continuity and communication (inpatient to outpatient)	N (ns)	Veterans Affairs medical centre
15. Gagnon *et al.* 1999, Schein *et al.* 2005	C	Frail older people/*Combination method*	RCT (1, 3)	Improving QoL, satisfaction with care, functional status; reducing admissions to hospital and length of stay	N (4)	Community health centres
16. Kemper 1988, Carcagno and Kemper 1988	USA	Frail older people/*Functional impairment*	RCT (1, 2)	Substituting case-managed care at home for care in nursing homes, so reduced LTC costs and improved QoL of elderly clients and their families	SW and N (4–10 in each agency)	Variable: public- and private-sector host agencies

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

Table 2. *(Cont.)*

Study	Country	Population/*Method of identification*	Design (research aims)	Aims of interventions	Skill mix (number)	Setting
17. Landi *et al.* 1999, 2001	I	Frail older people/*Population programme*	Retrospective database cohort study (1, 2)	Reorganising the care of frail older people in the community, with an integrated social and medical programme and case management	RN (ns)	Community geriatric evaluation unit
18. Leung *et al.* 2004	HK	Frail older people discharged from hospital/*Recent resource usage*	RCT (1, 2)	Integrated, quality and cost-effective care for frail elderly patients discharged from hospital	SW and N (2)	Not stated
19. Lynch *et al.* 2000	USA	High-risk population/*Predictive model*	Time sequence case study (1)	Optimised medical care co-ordination, increased patient wellbeing, community involvement and sense of purpose	N (12)	Not stated
20. Lyon *et al.* 2006	E	Older people/*Combination model*	Observational study (1)	Reducing emergency medical admissions	SW (1), DN (1)	Primary health care
21. Marshall *et al.* 1999; Long 2002	USA	Frail older people/*Combined functional impairment and resource usage*	RCT (1, 2)	Eliminating fragmented care, inappropriate utilisation, costs, and role confusion with co-ordinating chronic care	SW and N (2)	Medical office
22. Newcomer *et al.* 2004, Maravilla *et al.* 2005	USA	Frail older people/*Population programme*	RCT (1)	More timely and comprehensive care, improving patient health and reducing health-care use	N (6; 2 per AMG)	Affiliated medical groups (AMG)
23. Pugh *et al.* 2001	USA	Coronary heart failure/*Resource usage*	RCT (1, 2)	Improving outcomes (functional status and QoL) and keeping costs neutral	N (2)	Hospital

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

24. Ritchie *et al.* 2002	USA	Frail elderly veterans living in rural areas/*Population based*	RCT (1)	Integrating community-based, chronic geriatric care, health, functioning and community tenure	SW and N teams (ns)	Not stated
25. Ross and Tissier 1997	E	Elderly and physically disabled clients/*Referral*	Multi-method case study (3, 4)	Focus on general practice as a setting for assessment and care management by co-ordinating SW and DN assessments	SW (1) and DN (1)	Primary care and social services
26. Schore *et al.* 1999	USA	High-cost Medicare beneficiaries/*Resource usage*	RCT (1, 2, 3, 4)	Improving client health so reducing medical expenses, especially for costly inpatient care	N (2) and SW (1)	Hospital
27. Schraeder *et al.* 2005	USA	Multiple chronic conditions targeted[2]/*Population programme*	RCT (1)	Improving client health so reduced medical expenses, especially for costly inpatient care	PCT (ns)	Primary health care where possible
28. Tucker and Brown 1997	E	Frail older people and carers/*Referral*	Multi-method case study (1)	Meeting the needs of older people through the development of joint commissioning	SW; DN; OT (ns)	General practitioner/fund-holding practices
29. Weiner *et al.* 2003	E	Older people, majority with mental health problems/*Mainly referral*	Survey (3, 4)	Promoting convenient, user-centred services and improving the integration of health and social care	CPN, DN, hospital N, OT (ns)	Social services, primary and secondary health care

Key to countries: C: Canada; E: England; HK: Hong Kong; I: Italy; Sc: Scotland.
Key to research aims: 1: impact/effectiveness; 2: cost effectiveness; 3: process of service delivery; 4: services provided.
Key to professions/staff/skill mix: $^{+A}$: plus assistants; APN: advanced practitioner nurse; CPN: community psychiatric nurse; DN: district nurse; G: geriatrician; N: nurse; NS: nurse specialist; OT: occupational therapist; P: physiotherapist; PCT: primary care team (physician, advanced practice nurse, nurse case manager, case assistant); RCM: registrar in community medicine; RN: registered nurse; SW: social worker.
Other notes: LTC: long-term care. ns: not stated. QoL: quality of life. RCT: randomised controlled trial. 1. Congestive heart failure 29%; coronary artery disease 24%; diabetes, 13%. 2. Coronary artery disease 48%; diabetes 38%; chronic pulmonary disease 28%; atrial fibrillation 23%; congestive heart failure 20%.

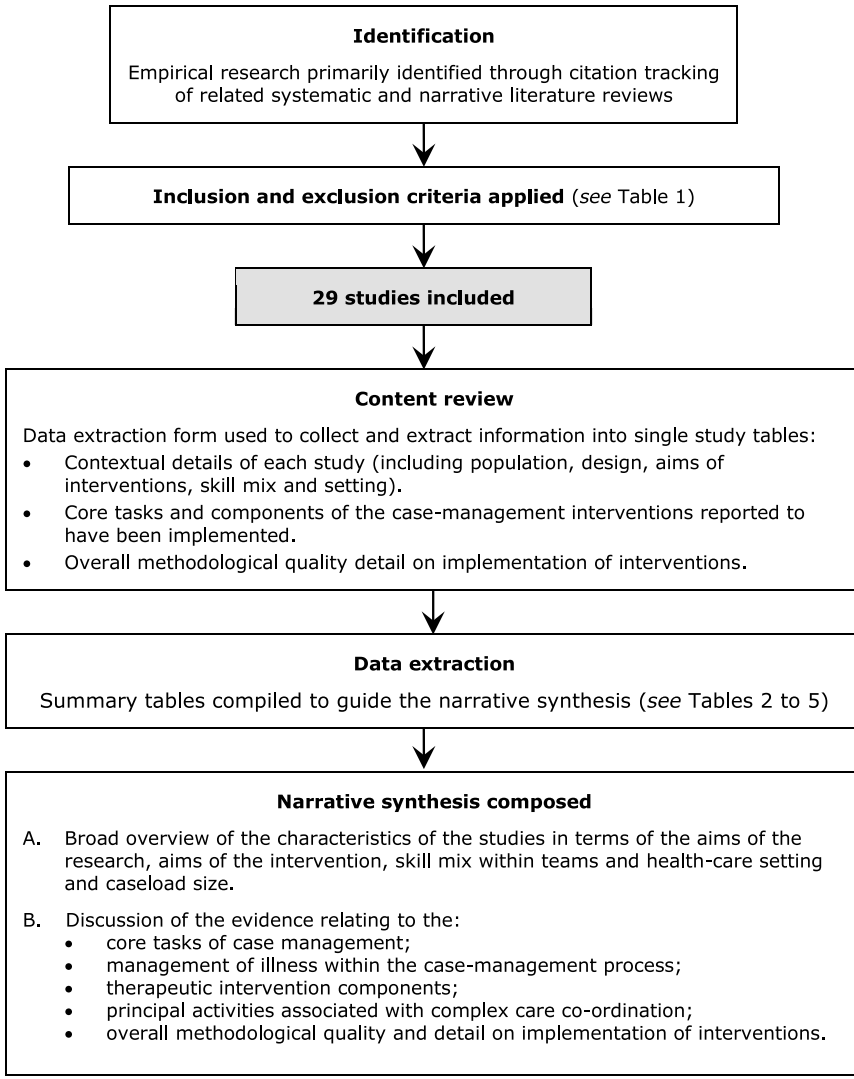


Figure 1. The steps and procedures of the review.

emergency rooms, in-patient hospital services and other acute care services [10]. Similarly, in England, one of the community-care demonstration projects aimed to prevent admissions to residential, nursing home or long-stay hospital care and to provide support to the carers of very frail older people [11]. On the other hand, other projects had solely administrative goals: one aimed to reduce hospital occupancy as a means of

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

achieving waiting list and waiting time targets [7 (Boaden *et al.* 2005)], and another aimed to reduce emergency medical admissions [20]. A few studies reported explicit system-oriented goals, often focused upon integrating fragmented care services, *e.g.* one aimed to integrate social and medical care with a case-management programme [5].

Skill mix in care teams and the health-care settings

Nurses were the only professionals with the case-management role in almost one-half (14) of the studies: they were variously registered nurses, specialist nurses, district nurses and advanced practice nurses (APNs). Over one-third (11) of the interventions employed both nurses and social workers as case managers and four also had other professionals, most often occupational therapists (OTs). Most of the case managers were based in the community, usually in primary health care or at medical centres or offices that accommodated core diagnostic services, and few were based in hospitals. Three studies did not report clearly where the case managers were based [18, 19, 24].

Caseload size

Fewer than one-half (13) of the studies reported the caseload size of the case managers. The reported caseloads ranged from 22 [1] to 500 [12]. Some of the variation may reflect inconsistent reporting between 'active' and 'maintained' cases, although some studies reported both. For example, the Newcomer *et al.* study [22] of preventative nurse case management for high-risk geriatric patients enrolled in a Medicare[2] plan had 60 active cases but 250 were maintained on the caseload. This study also reported that: the intensity of the role varied with the risk priority of the patients (17% were high risk, 37% medium risk and 46% low risk); that the average contact during the year was 7.7 hours (standard deviation (SD) 3.7); and that the factors associated with higher-risk priorities were co-morbidities, service utilisation inconsistent with the patient's condition, unsafe home environment, nutrition problems, and poly-pharmacy. Another study [12] reported that case managers had between 350 and 500 active patients, so clearly only a small proportion could have received an intensive service. Average caseloads of 130 were reported at one of the study sites [27], but the nurse case-managers (NCMs) were supported by APNs and case assistants (CAs) and, respectively, averaged 8.2 and 3.2 contacts in the first year of service (increasing to 10.3 and 5.5 contacts in the second year); and a high proportion of the patient contacts were by telephone (62% NCM; 94% CA). It is impossible to indicate an optimal caseload size given the great variability in the types of patients, in the levels of

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

TABLE 3. *Case managers' responsibilities and tasks in the 29 interventions*

Responsibilities and tasks	N	%
A. Core tasks of case management:		
Assessment	29	100
Care planning	29	100
Implementation/management of care plan	29	100
Monitoring	22	76
Review	22	76
Case finding and screening	12	41
Case closure	9	31
B. Management of illness components:		
Self-management education	16	55
Medication management	9	31
Patient reminders	7	24
Care delivery and 'hands-on' nursing	6	21
C. Complex care co-ordination:		
Co-ordination/liaison with other outside services	26	90
Co-ordination/liaison with multidisciplinary team	23	79
Managing care network	12	41
Advice re: benefits, financial and legal issues	4	14
Provider education	3	10
D. Therapeutic intervention components:		
Psychological support of client	16	55
Family support	16	55
Carer education	14	48
Counselling/therapy	7	24

Note: Sample size = 29.

severity of their conditions, in the methods of identification and the key components of the case-management intervention.

The core tasks of case management

The coverage of each case-management task was separately assessed for all the studies (Table 3). Although the core tasks of assessment, care planning and implementation/management were common to all programmes, there was considerable variation in their delivery. A number of qualitative aspects are now examined in connection with each core task.

Case finding and screening

Although not all studies were targeted solely on patients with high risks [as were 14 and 22], the heterogeneity of the populations, settings and providers indicate that various methods are used to identify high-risk patients for case management (Table 2). Almost half of the studies used

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

either data relating to recent resource usage to identify patients (usually recent hospital admissions or history of previous admissions) (7; 24%), or a combination of resource usage and functional impairment (usually with a disease-specific element) (6; 21%). Only two studies, both focused on frail elderly people, used functional impairment to identify older people at risk of admission to residential, nursing or long-stay hospital care [11, 6 (Blue *et al.* 2001)]. Six studies relied upon referrals of patients as their prime method of identification of clients [3, 4, 10 (Brown *et al.* 2004), 12, 25, 28, 29]. Clearly different methods have to be adopted to suit the local information systems, which some studies noted were inadequate [1, 7, 10 (Brown *et al.* 2004)]. The method of identifying patients often determined the level of involvement of case managers at this stage. In 12 studies, case managers were clearly actively involved in the case finding or screening of patients.

Assessment

Whilst all the schemes assessed patients in order to develop a care plan, only some varied the intensity of the initial assessment according to the level of risk of the patient as determined at the screening stage. As most targeted high-risk patients, the assessments tended to be comprehensive. Some studies emphasised this case-management task more than others [*e.g.* 4, 24], or highlighted specific training in geriatric assessment technology [5] and assessment in the home environment [6 (Blue *et al.* 2001), 24]. Some studies described the benefits of shared assessment documentation, joint visits and co-location that aided informal sharing of information [10 (Brown *et al.* 2004), 11, 20, 25, 28]. A number of practices were integral to speeding up this process by adopting: an integrated case-management approach [20], better screening processes [16 (Kemper 1988)], or smaller caseloads [10 (Brown *et al.* 2004)].

Although few studies provided details of the specific assessment measures, comprehensive structured assessment measures were used by several [16, 11, 27, 15], the most frequent being the *Minimum Data Set for Home Care* [5, 17 (Landi *et al.* 2001), 18, 24]. In many cases, the assessments were completed by the nurses [18, 21, 27, 29]. One United Kingdom (UK) study reported that health staff often had difficulties with the financial assessments that were required in the context of providing social care [29]. Several studies reported a high level of unmet needs in patients that were either previously unrecognised or not being monitored or treated [7 (Boaden *et al.* 2005), 24], which highlights a benefit of routine standardised comprehensive assessment for people with long-term conditions. Almost one-half (14) of the studies did not report information on whether or not

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

there was continuity between assessment and the other core tasks of case management. Of the remainder, 12 indicated that in most cases there was continuity in both assessment and case-management functions, and only one study [27] explicitly reported that these tasks were separated. In this study, each of the primary care team members had clearly defined roles. Patients in the high-risk category received intensive assessment, teaching, co-ordination from the APN, regularly scheduled NCM phone calls, and focused monitoring calls at least monthly from the CA.

Care planning and implementation of the care plans

In these tasks, the assessment is translated into the development of a care plan and then executed and delivered by the case manager. Although all studies reported these as core functions of case management, not all described how the process was undertaken. Three [12, 19, 22] ensured that all identified problems were addressed by using advanced information technology, including shared electronic medical records and access to resource directories and clinical guidelines. One study [19] reported that the high-risk registry, care plans and metrics resided on a secure server and were accessible through user authentication and secured, encrypted transmissions.

The process of care planning has many components and may cross many settings rather than be episode-based. Case managers in many of the programmes relied upon making referrals to other services. It was clear that in many of the evaluated schemes the range of services was dependent not only on the scope of the intervention but also on both the availability of appropriate long-term care and community resources [16 (Kemper 1988), 11] and on the knowledge, skills and experience of case managers [26]. The fragmentation of care for people with cognitive impairment was highlighted in a UK demonstration study, yet the APNs had little experience of designing care plans for this group [7 (Boaden *et al.* 2005)]. Given the frequent lack of consensus among professionals, relatives, carers and clients about the proposed care plan [25], clearly good negotiation and communication skills are essential.

Few studies reported sufficient information by which to gauge the intensity of the intervention implied by the care plan, but overall it emerged that many factors influence intensity. Eleven studies reported the total hours or contacts per case, usually per year. Hours-per-case ranged from 4.5 [12] to the equivalent of 54 hours per year [8]. Three studies [6 (Blue *et al.* 2001), 13, 23] noted that contacts were more frequent during the initial case-management period and decreased as the patients became more independent in managing their condition. One multi-site study

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

[10 (Brown *et al.* 2007)] reported an emphasis on telephone contacts while another reported more home visits despite active encouragement to manage issues over the telephone [15 (Gagnon *et al.* 1999)]. Telephone contacts were likely to be under-reported because of the burden of recording [15 (Gagnon *et al.* 1999)]. One [13] of the few studies that indicated the balance of time between different tasks reported that more of the case managers' time was directed towards co-ordinating health and community-based services, rather than interacting directly with the patient. Other studies noted that administrative tasks reduced the time available for direct work with the patients and may have reduced the intensity and impact of the intervention [7 (Boaden *et al.* 2005), 15, 16 (Kemper 1988)]. In addition to caseload size, a number of studies noted the detrimental effect on intensity and the role conflicts associated with combining the case-management role with other clinical responsibilities [1, 10 (Brown *et al.* 2004), 25].

Crucial to the effective implementation of case management is the influence that case managers have over the form and content of the services provided (Challis 2003). Only four studies clearly stated that case managers had some control over the supply or availability of services or other resources [11, 13, 16 (Kemper 1988), 20]. In another five interventions, team-level decisions regarding the allocation of resources were reported, but most of the studied programmes relied upon referrals to other services. It has been argued that a brokerage model alone is insufficient to exert influence and is unlikely to be very effective (Arnold 1987; Austin 1992). Even those programmes with more budgetary control were limited in how far they could achieve their programme goals without adequate service provision. In one demonstration study, for example, although 'hands-on' personal care, home health care, homemaking and meals were the backbone of the direct service component, they were in short supply [16 (Kemper 1988)].

Monitoring and review

Three-quarters of the studies reported monitoring and review as case-management tasks. Some interventions monitored the patients' health [6 (Blue *et al.* 2001), 7 (Boaden *et al.* 2005)] to anticipate health problems and to prevent deterioration and unnecessary admissions. One scheme monitored the patients' level of condition-specific learning [10 (Brown *et al.* 2004)]. Two studies [2, 5] described the monitoring of services provided. The level of monitoring was linked to the patient's condition in some schemes. For example, in the UK Evercare demonstration programme, if a patient's condition improved dramatically, he or she was placed in the

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

green category (minimum monitoring) pending further change [7 (Boaden *et al.* 2005)]. In many schemes, monitoring was during scheduled telephone and patient contacts. It was carried out in most cases directly by the NCM, but in one scheme [27] around one-half of the CA's time was spent in monitoring activities compared to around one-fifth of the NCM's. Similarly, one English study found that at some sites the NCM's input was more for assessment than for monitoring or review [29]. Mechanisms by which to monitor the providers of care, particularly formal in-home services, were identified as a major need [16 (Kemper 1988)] and their absence led to considerably more monitoring than anticipated. Techniques included the use of informal care-givers and skilled care-providers to monitor semi-skilled in-home services, scheduling the case managers' visits to coincide with the service, providing checklists of tasks to be completed, and generally increasing the case managers' accessibility to patients [16 (Kemper 1988)]. A number of schemes used computerised case-management records to ensure that needs were not overlooked and that scheduled interventions occurred as planned [22 (Newcomer *et al.* 2004), 22 (Maravilla, Graves and Newcomer 2005), 15 (Gagnon *et al.* 1999), 27].

Case closure

Most (16) of the studies did not state the duration of the case managers' involvement or whether or not services were time limited. Of those that did, seven explicitly stated that they were not time limited [2, 7 (Boaden *et al.* 2005), 9, 11, 16 (Kemper 1988), 22 (Newcomer *et al.* 2004), 27]. Others offered services for one year [6 (Blue *et al.* 2001), 14, 25], for 10 months [15 (Gagnon *et al.* 1999)], and for six months [23]. Less than one-third provided details of the case manager's ability to close a case. This omission may reflect a presumption of a long-term responsibility, but some services that were clearly time limited [*e.g.* 6 (Blue *et al.* 2001), 15 (Gagnon *et al.* 1999)] or funded for only a limited time [25] provided no details about case closure. One study noted that a patient's health might improve to the point that case management would no longer be appropriate [7 (Boaden *et al.* 2005)]. The original model described patients remaining as a client for life, albeit with the possibility of a much reduced minimum monitoring service if their health improved, but there were procedures for discharge once the patient's needs were met or if they chose to leave. One site in this study found that one-fifth of the patients were not suitable for long-term follow-up because they were low risk. These patients were discharged but could contact the service if they experienced an exacerbation of their condition. Previous patients of the service were also flagged on emergency

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

admissions systems so that follow-up and, if necessary, case management could continue [7 (Boaden *et al.* 2005)].

The case-management intervention components

Management of illness

The majority (23) of the studies included one or more of the management of illness intervention components shown in block B of Table 3, although incomplete reports sometimes made the extent or presence of these difficult to discern. A minority of the nurses performed care delivery duties or 'hands-on' nursing as part of the case-management role [2, 6], and others continued with their prior nursing responsibilities [1, 4, 25, 28, 29], which often gave rise to tensions when combined with the case-management functions. Most case managers worked as a co-ordinator rather than in a care-giving capacity, and in general case management was separated from the immediate activity of providing clinical care.

Just over one-half of the studies reported providing self-management patient education and almost one-half provided carer education. Diverse combinations of illnesses meant that a tailored approach to patient education was common [1, 10 (Brown *et al.* 2004)]. In one study, however, the broad target group made it difficult to develop materials for and to train case managers on the comprehensive disease-specific self-care education that can help reduce the need for hospital admissions [26]. Others were able to employ standard methods, such as circulating educational materials [23] and providing training classes [18]. Although it was a component in many studies, some gave great emphasis to patient education. In one demonstration, nearly all programmes devoted a high level of attention to improving patient education about adherence to treatment and self-care regimens and many developed their own educational materials [10 (Brown *et al.* 2004)]. Nearly three-quarters of all patients had a contact with the case manager that focused upon either disease-specific or self-care education [10 (Chen *et al.* 2005)]. In another scheme for frail elders, almost one-half (47 %) of the case managers' initial activities were educational, with 57 per cent of the patients/families receiving at least one such intervention [24]. In another scheme, however, older people who were less frail (21 %) received patient education as part of the nurse case-management intervention [15 (Gagnon *et al.* 1999), 15 (Schein *et al.* 2005)].

Nine studies incorporated medication management as part of the case manager's role including: assessment and monitoring of medication adherence; explaining medications; regular monitoring to detect changes

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

that may be required; and ensuring these were followed up by the relevant doctor or consultant. Medication problems were noted for 36 per cent of the clients in the prevention-oriented case management scheme for frail older people [22 (Newcomer *et al.* 2004)]. Seven studies specifically mentioned that the case-manager's role included reminding patients of appointments. One demonstration adopted a patient advocacy model of case management which involved case managers scheduling and accompanying participants to appointments [21]. Similarly in the [22 (Newcomer *et al.* 2004)] scheme, case managers routinely monitored physician contacts and clinic appointments. Those who missed appointments were contacted to identify the factors that caused missed appointments, and they were subsequently called with reminders, helped with transport, accompanied to the clinic and educated in relation to their conditions.

Therapeutic intervention components

Two-thirds (19) of the studies included one or more therapeutic intervention components including: psychological support; family support; counselling/therapy; and carer education (Table 3, block D). Though again it was usually difficult to determine the time spent performing these tasks and most of the studies did no more than list these components, some interventions appeared to have a psycho-social focus. For example, in one scheme case managers made a special effort to support informal caregivers, including on-site or telephone counselling, health-education training programmes, mutual support groups, and assistance in care planning and co-ordination to encourage them to continue their care [18]. A secondary analysis of the data relating to nurse case-management interventions for frail older people [15 (Gagnon *et al.* 1999)] reported the proportion of patients in receipt of coping assistance (67%), lifespan care (35%; mostly involving family or care-giver support) and active listening (24%) [15 (Schein *et al.* 2005)]. Similarly, psycho-social support was emphasised by both patients and carers, and viewed as equally important to clinical care [7 (Boaden *et al.* 2005), 7 (Sargent *et al.* 2007)]. In another scheme, emotional support involved very little time in comparison to instrumental support: it was estimated at seven per cent of the NCM's time and five per cent of the CA's time during the second year [27].

The principal activities of complex care co-ordination

Although in almost all the schemes, the case managers co-ordinated the intervention with outside services (26) and in their own multi-disciplinary team (23), fewer (12) had a broad purview of services in managing the care

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

network (Table 3, block C). For example, the APNs in the UK Evercare demonstration were expected to know where and when each of their patients made use of the services of the broader health system and were seen as the primary co-ordinators of their care [7 (Boaden *et al.* 2005)]. On the other hand, in the specialist nurse intervention for heart failure patients, clinical input and patient contact was stressed more than linkage to other services [6 (Blue *et al.* 2001)]. Few studies reported how much of the case managers' time was spent co-ordinating services, but an exception was one site in a study in which CAs spent more than three times as much of their time with patients in co-ordination (26 %) compared to the NCMs (7 %) [27]. With regard to the integration of care between health and social services, over one-half of the studies reported specific links. In 20 studies, the NCMs were in the same team as social workers, and in 11 interventions nurse and social-work case-managers worked together. This offered more opportunities for multi-disciplinary working, including for discussing the service users' cases more often and in more detail; faster referral to colleagues; improvements in role understanding; shared assessments and case-management processes through the development of joint paperwork and joint visits; and the most appropriate allocation of case managers.

With reference to managing the care network, we attempted to determine the nature and extent of the links between case managers and physicians or general medical practitioners (GPs). Such links were described as enabling variously: more appropriate referrals and better targeting of patients [22 (Newcomer *et al.* 2004), 25], the co-ordination of effective care, access to medical advice, adherence to treatment plans, preventing hospital admissions [26] and keeping physicians informed about the programme plans for their patients [10 (Brown *et al.* 2004)]. Strategies to improve these links included co-location with primary care [7 (Boaden *et al.* 2005), 27], regular meetings between case managers and GPs, written reports on patients, shared electronic records [12], maintaining informal contacts and accompanying the patient on trips to the doctors [10 (Brown *et al.* 2004)]. Some of the case managers in one scheme needed more training in interactions with medical practitioners [16 (Kemper 1988)] and explicit mechanisms were necessary to increase physicians' involvement [16 (Kemper 1988), 16 (Carcagno and Kemper 1988)]. In contrast, programmes in a recent demonstration employed nurses with substantial experience who could work autonomously and confidently interact with physicians [10 (Brown *et al.* 2007)].

Only four studies reported that the case-management role extended to giving advice on social-security benefits and financial or legal issues. Case managers in all but one of these included both nurses and social workers and interventions were targeted at frail older people. Only three studies

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

explicitly included provider education as a component of the case manager's role [6 (Blue *et al.* 2001), 10 (Brown *et al.* 2004), 22 (Newcomer *et al.* 2004)]. Some schemes in one demonstration study appeared to be more rigorous in ensuring that physicians adhered to guidelines [10 (Brown *et al.* 2004)]. Where patients were not receiving care consistent with the guidelines, the care co-ordinators tried to work collaboratively with the patient's physician to determine whether and how to rectify the situation. This activity required considerable tact and diplomacy. Some schemes were more pro-active in approaching physicians by having care co-ordinators 'hold doctors to task' about adherence to guidelines [10 (Brown *et al.* 2004)], and in others, although the case managers did not explicitly offer provider education, advanced information technology played a key role [12, 19, 27]. Many different evidence-based guidelines could be adopted. Access by multiple carers to a shared electronic medical record enabled several guidelines to be followed and provided alerts for patients who require attention, facilitating smoother integration into primary care workflow.

The quality of the implementation data

Most studies described the implementation of the interventions but the detail was variable. Many did not state basic information like the previous experience and levels of training and supervision of the nurses, and in only a few studies was the case-management intervention process data comprehensive, useful and easily interpretable. Only seven studies presented sufficient implementation detail to enable replication [7 (Boaden *et al.* 2005), 10 (Brown *et al.* 2004), 11, 15 (Gagnon *et al.* 1999), 16 (Kemper 1988), 22 (Newcomer *et al.* 2004), 27]. Although 24 studies measured some process data, over half presented no case-management-specific activity data, including some of the RCTs [5, 6, 14]. Few explicitly linked processes and outcomes, and only five set research questions relating to process and impact [7 (Boaden *et al.* 2005), 10 (Brown *et al.* 2004), 11, 15, 26]. Few studies stated that treatment was standardised by using a manual or protocol, and few included details on whether integrity or adherence to the intended planned design was evaluated or monitored. One study reported the results of a review of selected cases by a nurse consultant who specialised in case management [26]. Oversights by project case managers were identified, suggesting that nurses adopting this role with no prior experience in community nursing may under-estimate the importance of social and environmental factors in improving the health of the client. The difficulties of moving from a hospital setting to the less familiar community setting

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

were noted in some studies [*e.g.* 15, 23] as elsewhere (Drennan, Goodman and Leyshon 2005).

Discussion and conclusions

This paper has presented a subjective synthesis of the published evidence about nurse-led case management schemes for frail older people and related patient groups, one informed by the authors' long involvement in process and outcome research in the field. The complexity and ambiguity of case management, along with the previously identified difficulties in identifying implementation studies (Arai *et al.* 2005), led us to believe that a purposive search technique was required. Our principal search method, citation tracking, enabled greater specificity than a conventional electronic search of bibliographic databases that incur numerous 'false-positive' references and require more detailed checking. While the purposive strategy may have resulted in some selection bias, the approach gave more time for evaluating and synthesising the studies. We believe the review has been sufficiently comprehensive to identify the most important findings from the field.[3]

Case management for long-term conditions is a complex intervention, with the role involving several components, making it difficult to establish with any precision which is the 'active ingredient' (Loveman, Royle and Waugh 2003). Although not attempted here, this certainly presents difficulties in establishing the true impact of nurse-led case management. This absence of a clear understanding of case management is an obstacle to the advancement of research and practice in this area. There was considerable variation in the case-management interventions reported in the 29 studies that related to over 120 sites, although there was some consistency in the core tasks. All studies reported that case managers undertook assessment, care planning and implementation of the care plan, but greater variation was evident for case finding, monitoring, review and case closure, as with the three intervention components of the management of illness, therapeutic interventions and complex care co-ordination (Table 3). The variability among the studies reflected different models of care, such as the Chronic Care Model, in addition to local implementation issues, such as different target client groups and different ranges of services at the disposal of the case manager.

These factors are likely to be highly related to the outcome results, but little attention was given to their description, as testified by many studies that were poorly rated for implementation detail. Many had too few details for us to understand how the core tasks and components were

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

operationalised, or to comprehend the breadth, intensity and duration of the intervention. These variations in the quality of reporting and the difficulties in collecting standardised information on each core task means that the review's findings must be interpreted cautiously. Only a minority of studies provided methodologically sound process data, the complement of a widespread preference to report outcomes and methodological quality (Petticrew and Roberts 2006). As this review has concentrated upon implementation processes rather than outcomes, the size of the estimated impacts or effect sizes are not incorporated, nor is any greater weight given to higher-quality study designs. It is worth noting, however, that the wide range of research designs would make combining findings from process and outcome evaluations difficult.

We have tried to ensure that the presented synthesis of this literature has both intellectual quality and practical utility. A knowledge synthesis should result in a progressive paradigm shift that brings: (a) greater explanatory power to theory; (b) expanded scope of application to a practical problem; and (c) an increased capacity to pursue unsolved problems in future primary research (Strike and Posner 1983). Notwithstanding our methodological concerns, by attempting to unravel the issues relevant to the implementation of nurse case management for people with long-term conditions, this paper has several important findings that will inform the 'roll out' of similar interventions in many countries (Singh and Ham 2006), including England (Department of Health 2005*a*, 2005*b*), the USA (Dixon *et al.* 2004), Canada (Johri, Beland and Bergman 2003), Australia (National Health Priority Action Council 2006), New Zealand (Ashton 2000) and Italy (Landi *et al.* 1999).

Based on the reviewed evidence, three issues are believed to be key prerequisites for a coherent and sustainable implementation of case management for people with long-term conditions: programme fidelity, caseload size, and case-management practice. The first refers to the degree to which a particular service follows or is consistent with a programme model and has a well-defined set of interventions and procedures to help individuals achieve the desired goal (Bond *et al.* 2000) – readers familiar with the psychotherapy and psychiatric rehabilitation literatures will recognise the programme fidelity concept. This review has made clear the need to specify more clearly what and how case-management services should be provided to people with long-term conditions: this would encourage consistent and coherent implementation along with fuller measurement of what is actually being provided. Although most of the reviewed studies employed more than one case manager, few gave sufficient detail for us to assess the consistency of the intervention. Whilst the issues of professional autonomy and discretion also need addressing, to

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

facilitate replications of the interventions, future research should give more attention to implementation and processes, recording and measurement. Without such specificity and transparency in the reports, evaluations of case management or indeed other phenomena have little substance, and evidence-based practice will be unattainable.

The second issue, the case managers' caseload size, is related to the capacity to provide intensive support and is integral to the concept of fidelity. Caseload size is to a large extent contingent on the appropriate use of mechanisms to determine entry to case management (case finding and screening) and on the strategies for exiting the service. Furthermore, the size of caseload, combined with the level of need of recipients, to a large extent determines the service they receive and the monitoring and review phases of the process. Thus, if a case-management programme is to impact on the health of people with long-term conditions and on the rates of admission and re-admission, an effective and accurate system of case-finding is essential (Billings *et al.* 2006). The increase in the use of predictive modelling tools, such as the 'Patient At Risk of Re-hospitalisation' (PARR) case-finding algorithms, in primary care National Health Service (NHS) trusts in England, is likely to transform first-level screening and create new opportunities to make the business case for case management (Curry *et al.* 2005). Getting this element right has implications for the case mix and caseload size and thus the intervention's success. When caseload size increases, the capacity of case managers to carry out monitoring and review decreases. Integral to this will be effective caseload management and a dynamic caseload made up of different need profiles within the high-risk group (Cochrane and Fitzpatrick 2005).

It has also been suggested that well-designed stratification systems that match care to the variable needs of different patient groups are necessary to provide the most cost-effective care, ranging from intensive case management to providing a 'safety-net' of minimal intervention [6 (Stewart and Blue 2001), 22 (Newcomer *et al.* 2004)]. More cost-effective methods of maintaining contact, such as case management by telephone, may have to be adopted as caseload size increases. Despite its importance, few studies provided information on the termination of case management or the transfer of a patient to a less intensive programme. Interestingly, the issue is not explicitly addressed in recent policy guidance in England, although the duration of involvement is expected to be long (Department of Health 2005*a*). From this literature, it is clear that more research is needed to establish an optimal caseload for different service models, although it must be recognised that this is only one aspect of the effective targeting of case management and that this process is itself dynamic.

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

The third issue is case-management practice, which incorporates matters relating to the continuity of care, the intensity and breadth of involvement, and control over resources (Challis *et al.* 1995). Continuity of involvement involves practitioners remaining responsible for assessing, monitoring and reviewing cases, which is required to learn from effective and ineffective strategies at both the individual case and scheme levels (Challis 2003). Although poorly reported by almost one-half of the studies, those that provided details indicated continuity, in that assessment and case-management functions were not separated, but few case managers had control over the supply or availability of services or other resources. Although decisions about the allocation of resources were made at the team level in several interventions, the majority relied simply upon making referrals to necessary services, which may provide insufficient flexibility to enable services to be tailored to individual needs. Other features of the relationship between the case manager and the patient, such as the degree of empathy and support, are also potentially important. Overall, although these distinguishing features of case management were poorly reported, many interventions were deemed insufficiently intensive or too short in duration.

Intertwined with these three issues is the divergence between the case management of a chronic disease as against that of chronic disabilities. The former is primarily focused on the condition's volatility, hence the involvement of nurses with specialist skills and an emphasis on managing the illness – this review has shown that illness management is a prominent aspect of nurse case management. The latter focuses on compensation for loss of function and skills and on managing the care network. Chen *et al.* (2000) summarised the differences between case management and disease management: they saw practitioners of the former as 'generalists' and practitioners of the latter as 'specialists'. Both care-network management and illness management are fundamental for patients with complex long-term conditions. Ideally, the balance of activity between these should be reflected in the needs of the different target groups. It should be recognised, however, that combining the case-management role with many other tasks such as 'hands-on' care of acutely ill patients inevitably dilutes the impact of the intervention and detracts from what is arguably its defining task, the co-ordination of care over a long period. As indicated above, it is crucial that case managers can influence the delivery of care. One way in which they may achieve this is by having access to a 'hands-on' worker who, with appropriate training and supervision, undertakes a wide range of care tasks. The value of this supportive role has been reported although more attention needs to be given to the qualifications of such staff (Challis *et al.* 1995: 29).

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

As comprehensive case management for people with highly complex multiple long-term conditions is adopted in many countries, future research and commissioning would benefit from a consistent framework to describe this complex intervention. In England, for example, the widespread implementation using broad guidance without operational detail has been a missed opportunity for exploring the effectiveness of case management using rigorously designed experimental evaluations. It is important that future research examines not just what case managers generally do, but also the details of different approaches and the local health- and social-care resources with which they work. This variability will make it difficult, however, to describe thoroughly the interventions being delivered and thus to uncover the reasons for the eventual success or failure of the service. It is clear from this review that these problems are not confined to England.

The review has shown that articulating and measuring the implementation process is one of the greatest challenges for future research. The *Consort Statement* guidelines on how to report RCTs emphasise that 'precise details of the interventions intended for each group and how and when they were actually administered' are required (Moher *et al.* 2001). One way to ensure this is for commissioners of intervention studies to encourage mixed methods that address both implementation and effectiveness. As a minimum, it would be beneficial for future researchers, commissioners of research and journal editors to ensure that full descriptions of the content of case-management intervention and model are reported, particularly the roles, core tasks and differentiating features such as intensity, scope or breadth of role, and the duration of the intervention. Well-designed studies are necessary to inform the development of appropriate and effective forms of case management in different settings and for different populations by exploring the components of case-management interventions alongside estimating clinical effectiveness.

Acknowledgements

This study was undertaken by the Personal Social Services Research Unit, which receives funding from the Department of Health. The views expressed in the publication are those of the authors and not necessarily those of the Department of Health. This work was supported by a grant from the UK National Institute for Health Research 'Service Delivery and Organisation Programme'.

NOTES

1 A previous categorisation helped with classifying the various methods of identifying high-risk patients (Hutt, Rosen and McCauley 2004).

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

2 Medicare in the USA is health insurance for people age 65 or more years, under age 65 with certain disabilities, and any age with end-stage renal disease (permanent kidney failure requiring dialysis or a kidney transplant) (http://www.medicare.gov/publications/pubs/pdf/10050.pdf).
3 Recent guidance on conducting narrative synthesis in systematic reviews may be useful in conducting future reviews of implementation studies but was unfortunately not available for this review (Popay *et al.* 2005).

References

Aadalen, S. P. 1998. Methodological challenges to prospective study of an innovation: interregional nursing care management of cardiovascular patients. *Journal of Evaluation in Clinical Practice*, **4**, 3, 197–223.
Allen, S. 1999. Description and outcomes of a Medicare case management program by nurses. *Home Health Care Services Quarterly*, **18**, 2, 43–69.
Applebaum, R. and Austin, C. 1990. *Long Term Care Case Management: Design and Evaluation*. Springer, New York.
Arai, L., Roen, K., Roberts, H. and Popay, J. 2005. It might work in Oklahoma but will it work in Oakhampton? Context and implementation in the effectiveness literature on domestic smoke detectors. *Injury Prevention*, **11**, 3, 148–51.
Arnold, D. 1987. The brokerage model of long term care: a rose by any other name. *Home Health Care Services Quarterly*, **8**, 2, 23–43.
Ashton, T. 2000. New Zealand: long-term care in a decade of change. *Health Affairs*, **19**, 3, 72–85.
Audit Commission 1999. *First Assessment: A Review of District Nursing Services in England and Wales*. Audit Commission, London.
Austin, C. 1992. When the whole is more than the sum of its parts: case management issues from a systems perspective. Paper presented at the First International Conference on Long Term Care Case Management, February, Seattle, Washington.
Beardshaw, V. and Towell, D. 1990. *Assessment and Care Management: Implications for the Implementation of 'Caring For People'*. Briefing Paper 10, King's Fund Institute, London.
Bergen, A. 1997. The role of community nurses as care managers. *British Journal of Community Health Nursing*, **2**, 10, 466–74.
Bernabei, R., Landi, F., Gambassi, G., Sgadari, A., Zuccala, G., Mor, V., Rubenstein, L. and Carbonin, P. 1998. Randomised trial of impact of model of integrated care and case management for older people living in the community. *British Medical Journal*, **316**, 7141, 1348–51.
Billings, J., Dixon, J., Mijanovich, T., Wennberg, D. 2006. Case finding for patients at risk of readmission to hospital: development of algorithm to identify high risk patients. *British Medical Journal*, **333**, 327, 12 August. doi:10.1136/bmj.38870.657917.AE.
Blue, L., Lang, E., McMurray, J., Davie, A., McDonagh, T., Murdoch, D., Petrie, M., Connolly, E., Norrie, J., Round, C., Ford, I. and Morrison, C. 2001. Randomised controlled trial of specialist nurse intervention in heart failure. *British Medical Journal*, **323**, 7315, 715–8.
Boaden, R., Dusheiko, M., Gravelle, H., Parker, S., Pickard, S., Roland, M., Sargent, P. and Sheaff, R. 2005. *Evercare Evaluation Interim Report: Implications for Supporting People with Long-term Conditions in the NHS*. National Primary Care Research and Development Centre, University of Manchester, Manchester, UK.
Bodenheimer, T., Wagner, E. H. and Grumbach, K. 2002. Improving primary care for patients with chronic illness. *Journal of the American Medical Association*, **288**, 14, 1775–9.

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

Bond, G., Evans, G., Salyers, M. P., Williams, J. and Kim, H. W. 2000. Measurement of fidelity in psychiatric rehabilitation. *Mental Health Services Research*, **2**, 2, 75–87.

Boyd, M. and Fisher, B. 1996. Community-based case management for chronically ill older adults. *Nursing Management*, **27**, 11, 31–2.

Brown, L., Tucker, C. and Domokos, T. 2003. Evaluating the impact of integrated health and social care teams on older people living in the community. *Health and Social Care in the Community*, **11**, 2, 85–94.

Brown, R., Peikes, D., Chen, A., Ng, J., Schore, J. and Soh, C. 2007. *The Evaluation of the Medicare Coordinated Care Demonstration: Findings for the First Two Years*. Mathematica Policy Research Inc., Princeton, New Jersey.

Brown, R., Schore, J., Archibald, N., Chen, A., Peikes, D., Sautter, K., Lavin, B., Aliotta, S. and Ensor, T. 2004. *Coordinating Care for Medicare Beneficiaries: Early Experiences of 15 Demonstration Programs, Their Patients, and Providers*. Report to the US Congress, Mathematica Policy Research Inc., Princeton, New Jersey.

Carcagno, G. J. and Kemper, P. 1988. The evaluation of the National Long Term Care Demonstration: 1. An overview of the channeling demonstration and its evaluation. *Health Services Research*, **23**, 1, 1–22.

Challis, D. 1992. Community care of elderly people: bringing together scarcity and choice, needs and costs. *Financial Accountability and Management*, **8**, 2, 77–95.

Challis, D. 1994. Care management. In Malin, N. A. (ed.), *Implementing Community Care*. Open University Press, Buckingham, UK, 59–82.

Challis, D. 2003. Achieving coordinated and integrated care among long term care services: the role of care management. In Brodsky, J., Habib, J. and Hirschfeld, M. (eds), *Key Policy Issues in Long Term Care*. World Health Organisation, Geneva, 139–89.

Challis, D., Chesterman, J., Luckett, R., Stewart, K. and Chessum, R. 2002. *Care Management in Social and Primary Health Care: The Gateshead Community Care Scheme*. Ashgate, Aldershot, UK.

Challis, D., Darton, R., Johnson, L., Stone, M. and Traske, K. 1995. *Care Management and Health Care of Older People: The Darlington Community Care Project*. Ashgate, Aldershot, UK.

Chen, A., Brown, R., Archibold, A., Alliotta, S. and Fox, P. D. 2000. *Best Practices in Coordinated Care*. Mathematica Policy Research Inc., Princeton, New Jersey.

Chen, A., Sautter, K., Schore, J., Brown, R., Peikes, D. and Orzol, S. 2005. *The Medical Care Development Medicare Coordinated Care Demonstration Program After One Year*. Document PR05-59, Mathematica Policy Research Inc., Princeton, New Jersey.

Cochrane, D. and Fitzpatrick, S. 2005. What works in case management of high risk populations? *Health Service Journal*, 8 December. Extended version available online at http://goodmanagement-hsj.co.uk/pdf/Casemanagement_081205.pdf [Accessed 21 December 2005].

Curry, N., Billings, J., Darin, B., Dixon, J., Williams, M. and Wennberg, D. 2005. *Predictive Risk Project: Literature Review*. Available online at http://www.kingsfund.org.uk/health_topics/patients_at_risk/predictive_risk.html [Accessed 24 October 2006].

Davies, B. and Challis, D. 1986. *Matching Resources to Needs in Community Care*. Gower, Aldershot, UK.

Department of Health 2005*a*. *Supporting People with Long-term Conditions: An NHS and Social Care Model to Support Local Innovation and Integration*. Stationery Office, London.

Department of Health 2005*b*. *Supporting People with Long-term Conditions: Liberating the Talents of Nurses Who Care for People with Long-term Conditions*. Stationery Office, London.

Dixon, J., Lewis, R., Rosen, R., Finlayson, B. and Gray, D. 2004. Can the NHS learn from US managed-care organisations? *British Medical Journal*, **328**, 7433, 223–5.

Dorr, D. A., Wilcox, A., Donnelly, S. M., Burns, L. and Clayton, P. D. 2005. Impact of generalist care managers on patients with diabetes. *Health Services Research*, **40**, 5 (part 1), 1400–21.

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

Drennan, V., Goodman, C. and Leyshon, S. 2005. *Supporting People with Long Term Conditions: Supporting Experienced Hospital Nurses to Move into Community Matron Roles*. Department of Health, London. Available online at http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4123450 [Accessed 8 May 2009].

Eastwood, A. J. and Sheldon, T. A. 1996. Organisation of asthma care: what difference does it make? A systematic review of the literature. *Quality and Safety in Health Care*, **5**, 3, 134–43.

Enguidanos, S. M., Gibbs, N. E., Simmons, W. J., Savoni, K. J., Jamison, P. M., Hackstaff, L., Griffin, A. M. and Cherin, D. A. 2003. Kaiser Permanente Community Partners Project: improving geriatric care management practices. *Journal of the American Geriatrics Society*, **51**, 5, 710–14.

Fisher, M. 1990–91. Defining the practice content of care management. *Social Work and Social Sciences Review*, **2**, 3, 204–230.

Fitzgerald, J. F., Smith, D. M., Martin, D. K., Freedman, J. A. and Katz, B. P. 1994. A case manager intervention to reduce readmissions. *Archives of Internal Medicine*, **154**, 15, 1721–9.

Gagnon, A., Schein, C., McVey, L. and Bergman, H. 1999. Randomized controlled trial of nurse case management of frail older people. *Journal of the American Geriatrics Society*, **47**, 9, 1118–24.

Hallberg, I. R. and Kristensson, J. 2004. Preventive home care of frail older people: a review of recent case management studies. *Journal of Clinical Nursing*, **13**, S2, 112–20.

Hofmarcher, M., Oxley, H. and Rusticelli, E. 2007. *Improved Health System Performance Through Better Care Coordination*. Health Working Paper 30, Organisation for Economic Cooperation and Development, Paris. Available online at http://www.oecd.org/dataoecd/22/9/39791610.pdf [Accessed 9 February 2009].

Hokenstad, M. and Johansson, L. 1996. Eldercare in Sweden: issues in service provision and case management. *Journal of Case Management*, **5**, 4, 137–41.

Hutt, R., Rosen, R. and McCauley, J. 2004. *Case Managing Long-term Conditions: What Impact Does it Have in the Treatment of Older People?* King's Fund, London.

Huxley, P., Hagan, T., Hennelly, R. and Hunt, J. 1990. *Effective Community Mental Health Services*. Gower, Aldershot, UK.

Johri, M., Beland, F. and Bergman, H. 2003. International experiments in integrated care for the elderly: a synthesis of the evidence. *International Journal of Geriatric Psychiatry*, **18**, 3, 222–35.

Kemper, P. 1988. The evaluation of the National Long Term Care Demonstration: 10. Overview of the findings. *Health Services Research*, **23**, 1, 161–74.

Kharicha, K., Levin, E., Iliffe, S. and Davey, B. 2004. Social work, general practice and evidence-based policy in the collaborative care of older people: current problems and future possibilities. *Health and Social Care in the Community*, **12**, 2, 134–41.

Lamb, G. S. 1992. Conceptual and methodological issues in nurse case management research. *Advances in Nursing Science*, **15**, 2, 16–24.

Landi, F., Lattanzio, F., Gambassi, G., Zuccala, G., Sgadari, A., Panfilo, M., Ruffilli, M. and Bernabei, R. 1999. A model for integrated home care of frail older patients: the Silver Network project. *Aging Clinical and Experimental Research*, **11**, 4, 262–72.

Landi, F., Onder, G., Russo, A., Tabaccanti, S., Rollo, R., Federici, S., Tua, E., Cesari, M. and Bernabei, R. 2001. A new model of integrated home care for the elderly: impact on hospital use. *Journal of Clinical Epidemiology*, **54**, 9, 968–70.

Leung, A. C., Liu, C., Chow, N. W. and Chi, I. 2004. Cost–benefit analysis of a case management project for the community-dwelling frail elderly in Hong Kong. *Journal of Applied Gerontology*, **23**, 1, 70–85.

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

Long, M. 2002. Case management model or case manager type? That is the question. *Health Care Manager*, **20**, 4, 53–65.

Loveman, E., Royle, P. and Waugh, N. 2003. Specialist nurses in diabetes mellitus. *Cochrane Database of Systematic Reviews*, 2, CD003286. doi: 10.1002/14651858.CD003286. Available online at http://mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003286/frame.html [Accessed 9 February 2009].

Lynch, J., Forman, S., Graff, S. and Gunby, M. 2000. High-risk population health management: achieving improved patient outcomes and near-term financial results. *American Journal of Managed Care*, **6**, 7, 781–91.

Lyon, D., Miller, J. and Pine, K. 2006. The Castlefields integrated-care model: the evidence summarised. *Journal of Integrated Care*, **14**, 1, 7–12.

Lyon, J. C. 1993. Models of nursing care delivery and case management: clarification of terms. *Nursing Economics*, **11**, 3, 163–78.

Maravilla, V., Graves, M. and Newcomer, R. 2005. Development of a standardized language for case management among high-risk elderly. *Lippincotts Case Management*, **10**, 1, 3–13.

Marshall, B., Long, M., Voss, J., Demma, K. and Skerl, K. 1999. Case management of the elderly in a health maintenance organization: the implications for program administration under managed care/practitioner application. *Journal of Healthcare Management*, **44**, 6, 477–91.

Mays, N., Pope, C. and Popay, J. 2005. Systematically reviewing qualitative and quantitative evidence to inform management and policy-making in the health field. *Journal of Health Services Research and Policy*, **10**, supplement 1, 6–20.

Moher, D., Schulz, K. F. and Altman, D. G. for the CONSORT Group 2001. The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomised trials. *The Lancet*, **357**, 9263, 1191–4.

Moxley, D. 1989. *The Practice of Case Management*. Sage, Newbury Park, California.

National Health Priority Action Council 2006. *National Chronic Disease Strategy*. Australian Government Department of Health and Ageing, Canberra.

Newcomer, R., Maravilla, V., Faculjak, P. and Graves, M. T. 2004. Outcomes of preventive case management among high-risk elderly in three medical groups: a randomized clinical trial. *Evaluation and the Health Professions*, **27**, 4, 323–48.

Norris, S. L., Nichols, P. J., Caspersen, C. J., Glasgow, R. E., Engelgau, M. M., Jack, J., Isham, G., Snyder, S. R. and Carande-Kulis, V. G. 2002. The effectiveness of disease and case management for people with diabetes: a systematic review. *American Journal of Preventive Medicine*, **22**, 4, supplement 1, 15–38.

Petticrew, M. and Roberts, H. 2006. *Systematic Reviews in the Social Sciences: A Practical Guide*. Blackwell, Oxford.

Phelan, E., Cheadle, A., Schwartz, S., Snyder, S., Williams, B., Wagner, E. and LoGerfo, J. 2003. Promoting health and preventing disability in older adults: lessons from intervention studies carried out through an academic-community partnership. *Family and Community Health*, **26**, 3, 214–20.

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., Britten, N., Roen, K. and Duffy, S. 2005. *Guidance on the Conduct of Narrative Synthesis in Systematic Reviews*. Version 2, Division of Health Research, University of Lancaster, Lancaster, UK.

Pugh, L., Havens, D., Xie, S., Robinson, J. and Blaha, C. 2001. Case management for elderly persons with heart failure: the quality of life and cost outcomes. *MedSurg Nursing*, **10**, 2, 71–8.

Raine, R., Haines, A., Sensky, T., Hutchings, A., Larkin, K. and Black, N. 2002. Systematic review of mental health interventions for patients with common somatic symptoms: can research evidence from secondary care be extrapolated to primary care? *British Medical Journal*, **325**, 7372, 1082.

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

Renders, C. M., Valk, G. D., Griffin, S., Wagner, E. H., van Eijk, J. Th. M. and Assendelft, W. J. J. 2001. Interventions to improve the management of diabetes mellitus in primary care, outpatient and community settings. *Cochrane Database of Systematic Reviews*, 1, CD001481. doi: 10.1002/14651858.CD001481.

Richards, S. and Coast, J. 2003. Interventions to improve access to health and social care after discharge from hospital: a systematic review. *Journal of Health Services Research Policy*, **8**, 3, 171–9.

Ritchie, C., Wieland, D., Tully, C., Rowe, J., Sims, R. and Bodne, E. 2002. Coordination and advocacy for rural elders (care): a model of rural case management with veterans. *The Gerontologist*, **42**, 3, 399–405.

Rosen, A. and Teesson, M. 2001. Does case management work? The evidence and the abuse of evidence-based medicine. *Australian and New Zealand Journal of Psychiatry*, **35**, 6, 731–46.

Ross, F. and Tissier, J. 1997. The care management interface with general practice: a case study. *Health and Social Care in the Community*, **5**, 3, 153–61.

Rothman, A. and Wagner, E. 2003. Chronic illness management: what is the role of primary care? *Annals of Internal Medicine*, **138**, 3, 256–61.

Rummery, K. and Glendinning, C. 2000. *Primary Care and Social Services: Developing New Partnerships for Older People*. Radcliffe Medical Press, Abingdon, UK.

Sargent, P., Pickard, S., Sheaff, R. and Boaden, R. 2007. Patient and carer perceptions of case management for long-term conditions. *Health and Social Care in the Community*, **15**, 6, 511–9. doi: 10.1111/j.1365-2524.2007.00708.x.

Schein, C., Gagnon, A. J., Chan, L., Morin, I. and Grondines, J. 2005. The association between specific nurse case-management interventions and elder health. *Journal of the American Geriatrics Society*, **53**, 4, 597–602.

Schore, J., Brown, R. and Cheh, V. 1999. Case management for high-cost Medicare beneficiaries. *Health Care Financing Review*, **20**, 4, 87–101.

Schraeder, C., Dworak, D., Stoll, J. F., Kucera, C., Waldschmidt, V. and Dworak, M. P. 2005. Managing elders with co-morbidities. *Journal of Ambulatory Care Management*, **28**, 3, 201–9.

Shortell, S. M., Marsteller, J. A., Lin, M., Pearson, M. L., Wu, S.-Y., Mendel, P., Cretin, S. and Rosen, M. 2004. The role of perceived team effectiveness in improving chronic illness care. *Medical Care*, **42**, 11, 1040–8.

Singh, D. 2005*a*. *Which Staff Improve Care for People with Long-term Conditions? A Rapid Review of the Literature*. NHS Modernisation Agency and University of Birmingham Health Service Management Centre, Birmingham, UK.

Singh, D. 2005*b*. *A Rapid Review of the Current State of Knowledge Regarding Lay-led Self-management of Chronic Illness*. NHS Modernisation Agency and University of Birmingham Health Service Management Centre, Birmingham, UK.

Singh, D. and Ham, C. 2006. *Improving Care for People with Long-term Conditions: A Review of UK and International Frameworks*. NHS Institute for Innovation and Improvement and University of Birmingham Health Service Management Centre, Birmingham, UK.

Stewart, S. and Blue, L. 2001. Key components of specialist nurse-led programmes in chronic heart failure. In Stewart, S. and Blue, L. (eds), *Improving Outcomes in Heart Failure: A Practical Guide to Specialist Nurse Intervention*. BMJ Books, London, 114–8.

Strike, K. and Posner, G. 1983. Types of synthesis and their criteria. In Ward, S. and Reed, L. (eds), *Knowledge Structure and Use: Implications for Synthesis and Interpretation*. Temple University Press, Philadelphia, Pennsylvania, 343–62.

Taylor, S., Bestall, J., Cotter, S., Falshaw, M., Hood, S., Parsons, S., Wood, L. and Underwood, M. 2005. Clinical service organisation for heart failure. *Cochrane Database of Systematic Reviews*, 2, CD002752. doi: 10.1002/14651858.CD002752.pub2.

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press

Tucker, C. and Brown, L. 1997. *Moving Towards the Integration of Health and Social Care: An Evaluation of Different Models for Accessing Community Care Services for Adults and their Carers*. Wiltshire Social Services and Department of Social and Policy Sciences, University of Bath, Bath, UK.

van Haastregt, J. C. M., Diederiks, J. P. M., van Rossum, E., de Witte, L. P. and Crebolder, H. F. J. M. 2000. Effects of preventive home visits to elderly people living in the community: systematic review. *British Medical Journal*, **320**, 7237, 754–8.

Wagner, E. H. 1998. Chronic disease management: what will it take to improve care for chronic illness? *Effective Clinical Practice*, **1**, 1, 2–4.

Weiner, K., Hughes, J., Challis, D. and Pedersen, I. 2003. Integrating health and social care at the micro level: health care professionals as care managers for older people. *Social Policy and Administration*, **37**, 5, 498–515.

Weingarten, S. R., Henning, J. M., Badamgarav, E., Knight, K., Hasselblad, V., Gano, Jr., A. and Ofman, J. J. 2002. Interventions used in disease management programmes for patients with chronic illness: which ones work? Meta-analysis of published reports. *British Medical Journal*, **325**, 7370, 925–32.

Accepted 14 April 2009; first published online 24 September 2009

Address for correspondence:
Siobhan Reilly, NIHR School for Primary Care Research,
National Primary Care Research and Development Centre,
Williamson Building, University of Manchester, Oxford Road,
Manchester M13 9PL, UK.

E-mail: siobhan.reilly@manchester.ac.uk

https://doi.org/10.1017/S0144686X09990183 Published online by Cambridge University Press