Barriers to Implementation of Case Management for Patients With Dementia: A Systematic Mixed Studies Review

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ABSTRACT

PURPOSE Results of case management designed for patients with dementia and their caregivers in community-based primary health care (CBPHC) were inconsistent. Our objective was to identify the relationships between key outcomes of case management and barriers to implementation.

METHODS We conducted a systematic mixed studies review (including quantitative and qualitative studies). Literature search was performed in MEDLINE, PsycINFO, Embase, and Cochrane Library (1995 up to August 2012). Case management intervention studies were used to assess clinical outcomes for patients, service use, caregiver outcomes, satisfaction, and cost-effectiveness. Qualitative studies were used to examine barriers to case management implementation. Patterns in the relationships between barriers to implementation and outcomes were identified using the configurational comparative method. The quality of studies was assessed using the Mixed Methods Appraisal Tool.

RESULTS Forty-three studies were selected (31 quantitative and 12 qualitative). Case management had a limited positive effect on behavioral symptoms of dementia and length of hospital stay for patients and on burden and depression for informal caregivers. Interventions that addressed a greater number of barriers to implementation resulted in increased number of positive outcomes. Results suggested that high-intensity case management was necessary and sufficient to produce positive clinical outcomes for patients and to optimize service use. Effective communication within the CBPHC team was necessary and sufficient for positive outcomes for caregivers.

CONCLUSIONS Clinicians and managers who implement case management in CBPHC should take into account high-intensity case management (small caseload, regular proactive patient follow-up, regular contact between case managers and family physicians) and effective communication between case managers and other CBPHC professionals and services.

INTRODUCTION

Dementia represents a global health priority. The number of people affected has risen exponentially, and its impact on patients, families, and society has been heavy.1,2 A recent systematic review reported that 35.6 million people lived with dementia worldwide in 2010, a number that will double every 20 years.3

The family physician is most often the first physician (72%) consulted for dementia-related problems.4,5 The Canadian community-based primary health care (CBPHC) is not yet prepared to deal with the growing prevalence of this disease.6,9 Most patients do not receive a diagnosis and appropriate service in CBPHC.5 When patients were screened for cognitive impairment, only 25% with moderate or severe impairment had this condition recorded in their medical charts by family physicians.10 Inadequate needs assessment and poor coordination of primary care services are additional factors that contribute to this problem.11
One approach taken to improve the care provided to this population is case management, which is aimed at transforming the health care system from service-based care to demand-directed care. Case management is a "collaborative process of assessment, planning, facilitation, care coordination and advocacy for options and services to meet an individual's and family's comprehensive health needs through communication and available resources to promote quality cost-effective outcomes."14

Case management as a multicomponent intervention varies across different countries and can include education and counseling, as well as close follow-up by a team of health care professionals or individual case managers. During the past decades, several case management projects have been implemented in CBPHC to improve clinical outcomes for patients with dementia and to optimize resource utilization.12,13,15-23 Despite best intentions, however, case management efficacy varies across the studies. Several systematic reviews have drawn mixed and controversial conclusions concerning the overall impact of case management interventions and were unable to explain the heterogeneity of outcomes. For example, Pimouguet et al reported no evidence for reduction in hospitalization resources and health care expenditures. On the contrary, Tam-Tham et al found a short-term positive effect on the risk to institutionalization. Another review showed improvement in satisfaction of patients and adherence to dementia guidelines.

It has been shown that one factor hindering the efficacy of case management is barriers to implementation (eg, high turnover of staff), which can lead to the interventions having little or no effect. Although recent study results emphasize the importance of accounting for such barriers to implementation, they have been understudied in case management.

Thus, the research question of our systematic review was as follows: for CBPHC, patients with dementia, what are the relationships between the key outcomes of case management and barriers to implementation?

METHODS

This systematic mixed studies review includes studies with diverse designs (quantitative and qualitative) to evaluate complex interventions.34

Eligibility Criteria

The population of these studies encompassed people of any age and sex with any type of dementia (diagnosis code) and/or primary causes of cognitive impairment (symptom code indicating memory loss) residing in the community and receiving care from health care professionals involved in case management in a range of community settings (eg, patients' homes, physicians' offices).35

Types of interventions include case management comprising assessment, care planning, implementation, management, and regular follow-up.14,36

Intervention studies (quantitative) included assessing outcomes of case management for patients and caregivers (eg, randomized controlled trials); intervention and nonintervention studies included evaluating barriers to case management implementation (eg, qualitative and mixed methods).

Types of outcome measures included clinical outcomes (behavioral symptoms, cognition, depression, functional status, health, quality of life, mortality), service use (nursing home, hospital and emergency department admission, length of hospital stay), caregiver outcomes (depression, burden, strain, quality of life, health), satisfaction (patient-caregiver dyad, health care professionals), and cost-effectiveness.

Search Strategy, Study Selection, and Data Extraction

In accordance with PRISMA statement standards, a specialized librarian conducted a literature search for publications in English or French listed in MEDLINE, PsycINFO, Embase, and the Cochrane Library that were published between 1995 (official publication of the case management standards of practice) and August 31, 2012. The first search was expanded using snowballing techniques looking at the references in the selected studies and systematic reviews. Moreover, all companion articles of the main studies were searched (including articles on the intervention's implementation). To assure the exhaustiveness of our search, we additionally looked for the citations in the Scopus database. The main key terms used to identify relevant studies were case management or care management or case coordination. An example of our search in PsycINFO is presented in Supplemental Appendix 1.

Based on the eligibility criteria, titles and abstracts were retrieved with examination of the relevant full-text copies independently by 2 reviewers (V.K., I.V.). Differences in the coding were resolved by consensus or referred to a third reviewer (P.P.). Kappa scores were calculated to estimate interreviewer reliability.

Two researchers (V.K., I.V.) independently extracted the following information from each study: characteristics of the study participants (eg, sample size, diagnosis), type of intervention (components), characteristics of the study (eg, design), and outcomes. Estimated outcomes in the included studies were categorized and coded as positive (effect was significant) or no effect (no effect or nonsignificant).
Quality Assessment
Two reviewers (V.K., P.P.) assessed the quality of the studies independently by using the Mixed Methods Appraisal Tool (MMAT), which has been validated for the critical appraisal of studies with diverse designs.39,40 The quality of each included study was assessed against the MMAT criteria. Interrater reliability was calculated based on a weighted κ statistic.41 Studies of poorer quality were not excluded, but a sensitivity analysis was performed to assess the impact of lower quality studies (with a score of 0 and 1) on the results.

Synthesis
We used a sequential explanatory synthesis design developed by Thomas et al42 to integrate qualitative evidence with quantitative findings.

Quantitative Synthesis
We identified the key outcomes of the studies. A meta-analysis was not possible because of the heterogeneity of the interventions (eg, different health care professionals involved in the patient-caregiver dyad’s care team vs individual case management).

To evaluate the magnitude of the positive outcomes, however, we calculated the effect size (the Cohen method).41 Furthermore, we developed 3 main groups of composite outcomes (clinical outcomes, service use, and outcomes for caregivers). They were dichotomized as either no effect (score = 0, no positive outcomes in the group) or positive (score = 1, at least 1 positive outcome in the group). According to the Cochrane recommendations, the results of randomized controlled trials and nonrandomized studies were analyzed and presented separately.43,44

Qualitative Synthesis
Grol et al10 underscored the potential role played by barriers to implementation in influencing outcomes. We identified these barriers based on the classification of Chaudoir et al93: barriers at the level of the organization (aspects of the organization in which the innovation is implemented, eg, organizations that misunderstand the case manager role); barriers at the level of the physician (characteristics of the individual physician implementing the innovation, eg, lack of training); and barriers at the level of the innovation (aspects of the innovation, eg, a short engagement period). As one of the main characteristics of case management, we evaluated case management intensity using the method developed by Pacala et al.46

More details are available in Supplemental Appendix 2.

Integration of Quantitative and Qualitative Syntheses
We identified whether the quantitative studies had addressed barriers to implementation by matching the qualitative synthesis results with qualitative synthesis findings (cross-study synthesis).43 Two reviewers (V.K., I.V.) performed this analysis independently, with calculation of κ scores to estimate interreviewer reliability.38

We applied the configurational comparative method47 to build barrier-outcome configurations (Boolean algebra) (for randomized controlled trials only). According to this method, it is necessary for a certain condition or combination of conditions to be present for an outcome to occur.37 We identified patterns in the relationships between conditions (addressed and nonaddressed barriers to case management implementation, eg, case management intensity) and outcomes (eg, fewer hospitalizations). To build configurations, we grouped studies that shared a given outcome (no effect or positive effect), and we searched for their shared conditions (barriers addressed or not addressed).

RESULTS

Search Results
Of 12,746 references, 43 studies were included in the review (56 publications) (Figure 1).

Of the included studies, 31 were quantitative (21 randomized controlled trials,* 6 nonrandomized studies,68-73 and 4 descriptive studies9,74-77), and 12 were qualitative studies (11 qualitative descriptive studies,78-89 and 1 multiple case study90) (Table 1, and Supplemental Tables 1 and 2). Patients’ mean age was 78.5 years, and they had mild to moderately severe cognitive deficiencies.

Description of the Case Management Interventions
Apart from the main components of the case management intervention,14 some studies used specific therapy (reminiscence, cognitive stimulation),59,62 a focus on anticholinesterase inhibitors prescriptions,12 and a Web-based system communication (Supplemental Table 1).12,14 Moreover, the heterogeneity of the studies was due to the health care professionals involved in case management (Table 1) vs individual case management† (Supplemental Tables 1 and 2).

In most of the studies communication between health care professionals occurred via referral made by case managers. In a few studies the communication was based on regular meeting and via the Web-based system.12,13,67,73

The quantitative descriptive studies did not provide new or contradictory information and are not presented. More details are available in Supplemental Appendix 3.

* References 12, 13, 15, 16, 18-20, 22, 23, 28, 29, 48-67.
† References 12, 13, 28, 29, 48, 53, 54-60, 63, 67-69, 73-75, 77.
‡ References 17, 22, 23, 31, 52, 62, 66, 70-72, 91.
Quantitative Synthesis: Key Outcomes
Evidence From Randomized Controlled Trials

For clinical outcomes, 4 of 10 trials showed a decrease in the frequency of behavioral symptoms of dementia in the case management intervention group (mean effect size, 0.88)\(^{12,23,48,59}\) (Table 2). Only 2 of 7 trials reported a decrease in the depression symptoms.\(^{21,58}\)

One of 5 trials showed an improvement in the functional status,\(^{67}\) 1 of 3 showed an increase in quality of life (effect size = 0.3),\(^{13}\) and 1 of 4 showed a decrease in mortality (effect size = 0.2).\(^{67}\) There was no effect on cognition and perceived health.

Regarding service use, no effect on institutionalization was observed in 8 of 11 trials that evaluated this outcome (Table 2).\(^{12,17,22,51,53,56,57,91}\) In the studies that showed a decrease in institutionalization,\(^{48,64,67}\) the mean effect size was small (0.21).\(^{48,67}\)

In 2 of 5 studies, hospital admission decreased (mean effect size = 0.66).\(^{21,23}\) A decrease in emergency department admission was shown in 1 of 3 studies (effect size = 0.17),\(^{21}\) and a decrease in length of hospital stay was shown in both of the studies that evaluated this outcome (mean effect size = 1.06).\(^{23,48}\)

Concerning outcomes for caregivers, 5 of 10 studies showed a decrease in depression (mean effect size = 0.68),\(^{15,21,29,59,65}\) and 4 of 11 showed a decrease in burden (mean effect size = 0.5) (Table 2).\(^{15,23,48}\)

Impacts on quality of life (mean effect size = 0.63),\(^{23,48}\) health (mean effect size = 0.32),\(^{12,28}\) and strain (effect size = 0.18)\(^{21}\) were less clear because of sparse evidence.

Only 1 of 4 studies assessing the satisfaction of caregivers reported an increase (Table 2).\(^{22}\) Evidence on health care professionals’ satisfaction was sparse.\(^{63}\)

All 5 trials found no evidence of cost savings (Table 2).\(^{15,53,57,58,63}\)

Evidence From Nonrandomized Studies

The results from nonrandomized studies showed findings similar to those of randomized controlled trials except for 2 outcomes: 2 studies showed cost-effectiveness of case management,\(^{69,71}\) and 1 study achieved improvement in cognition.\(^{68}\)

Qualitative Synthesis: Barriers to Implementation

The results of the barriers to implementation are displayed in Supplemental Table 3.\(^{15}\) The most fre-
BARRIERS TO DEMENTIA CASE MANAGEMENT

Study Design
Characteristic of the Intervention

Case management lacked an impact in specific situations because of large caseloads. Time constraints were frequent reported barriers at the organization and professional levels.

There was confusion about who was responsible for the delivery of services for elderly persons because health care professionals misunderstood the case manager role. Insufficient communication among health care professionals resulted in long-term objectives not being achieved in a timely manner and training in geriatrics was lacking. Case management lacked an impact on the desired outcomes because it was not integrated into the current health care system and family physicians and case managers were in different locations.

The case management approach changed from proactive to more reactive (focus on dealing with crises) because of large caseloads. Time constraints resulted in noncomprehensive and fragmented care provided to the patient-caregiver dyad.

Table 1. Characteristics of Included Qualitative Case Management Implementation Studies

| Author, Year | Country       | Study Design                | Sample                      | Characteristics of the Intervention                                      |
|--------------|---------------|-----------------------------|-----------------------------|--------------------------------------------------------------------------|
| Adams, 1996  | United Kingdom| Qualitative descriptive     | 14 Case managers            | Case management focusing on dementia patients and their caregivers       |
| Black, 2007  | United States | Thematic analysis           | 27 Community-based case managers | Case management focused on the diseases of older persons, including dementia |
| Bogardus, 1998| United States | Qualitative descriptive     | 10 Sets of participants (one set: patient, caregiver, case manager, clinician) | Case management focused on dementia patients and their caregivers       |
| Gibson, 2007 | United Kingdom| Thematic analysis           | 10 Dyads (patient with mild to moderate dementia and caregiver) receiving service either via a hospital-based memory clinic or a community-based nursing service | Comparison of a community-based and clinic-based memory service |
| Gladman, 2007 | United Kingdom| Qualitative descriptive     | 6 General practitioners, 1 geriatric psychiatrist, caregivers, patient advocate, the team manager, representatives of the Alzheimer Association | Case management focused on dementia patients and their caregivers       |
| Liebel, 2012 | United States | Thematic analysis           | 19 Patients                 | Secondary analysis of Medicare primary and consumer-directed care. Demonstration designed for patients with disabilities, including cognitive impairment (68%) |
| McCrae, 2011 | United Kingdom| Convergent design           | 33 Health care professionals (nurses, occupational therapist, psychiatrists, psychologist, support workers, team leaders) at 6 months, and 27 at 24 months | Evaluation of “Improving the Quality of Care for Older People in Lambeth” impact from staff perspectives: did it help or hinder in performing their roles |
| Netting, 1999 | United States | Qualitative descriptive     | 36 Different participants in case management: physicians, case managers, case assistants, practice managers, office staff | Case management focused on the diseases of older persons, including dementia |
| Seddon, 2001  | United Kingdom| Qualitative descriptive/Latent content analysis | 8 Care managers and 64 caregivers | Case management focused on caregiver’s assessment (ability to care and continue care, coping ability, relationship with a care recipient) |
| Van Eijken, 2008 | The Netherlands | Inductive thematic analysis | 15 General practitioners, 6 case managers (nurses), 2 geriatricians, 11 patients, and 37 caregivers | Case management focusing on problems in cognition, mood, behavior, functional decline, mobility, nutrition and urinary incontinence |
| Waugh, 2009   | Australia     | Qualitative descriptive     | 5 Staff workers of the Mercy Community Care agency: 2 managers, 2 case managers, one outreach worker | Case management for dementia patients who live alone |
| Minkman, 2009 | The Netherlands| Multiple case study         | 9 Case managers             | Case management focused on dementia patients and their caregivers       |

Turnover of case managers caused unstable relationships between the patient-caregiver dyad and the case manager, which resulted in less-effective care. Temporal recognition of dementia and support during early stages of the disease were absent because family physicians were reluctant to be involved in dementia care.

Integration of Findings from Quantitative and Qualitative Studies

Barrier-Outcome Matching

Based on the cross-study synthesis, the most addressed barriers in the intervention studies were the lack of a long intervention duration, the need for high-intensity case management, insufficient communication, case manager and family physicians being in

§ References 12, 13, 15, 21, 23, 28, 48, 51, 56, 57, 63-69, 71, 91.
† References 12, 13, 21, 23, 48, 49, 56, 57, 59, 60, 62, 67, 68, 70, 73.
‖ References 12, 13, 21, 23, 28, 48, 49, 53, 56-59, 68, 70, 73.
different locations,** and a lack of health care profes-
"sionals with geriatrics training.††

When matching the studies on barriers to inter-
vention studies, findings suggest
that addressing these barriers is
associated with better outcomes:
the studies with more barriers
addressed resulted in more posi-
tive outcomes (agreement κ = 0.94;
CI, 0.82-1.1).‡‡ More details are at
Supplemental Appendix 4.

** Barrier-Outcome Configurations
Using the configurational com-
parative method, we identified the
conditions with the most impor-
tant influence on outcomes (Sup-
plemental Table 4). The configura-
tions suggest that high-intensity
case management is necessary and
sufficient both to produce positive
clinical outcomes and to optimize
service use, and that effective
communication is necessary and
sufficient to achieve positive out-
comes for caregivers.

Other factors may play a
positive role, but the evidence is
sparse. The combination of effec-
tive communication among health
care professionals and training case
managers in geriatrics may produce
positive clinical outcomes (1 study).
The combination of a long inter-
vention (at least 12 months) and locat-
ing the case manager in a CBPHC
setting may lead to appropriate
service use outcomes (1 study). A
long duration of case management
may produce positive outcomes
for caregivers (2 studies). A small
number of studies12,13,56,57,60 (called
outliers), however, did not follow
the same pattern of configurations
that can be explained by other fac-
tors (Supplemental Table 4).

** Quality of Evidence
Overall, the quantitative and qual-
itative studies proved to be of high

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** Table 2. Outcomes in the Randomized Controlled Trials**

| Outcome                        | Randomized Controlled Trial | Effect Size of Positive Outcomea |
|--------------------------------|-----------------------------|----------------------------------|
|                                | No. Measuring the Outcome  | No. With a Positive Outcome     |                                  |
| **Clinical outcomes**          |                             |                                 |                                  |
| Behavioral/psychological       | 10                          | 4                                | 0.15**                          |
| symptoms of dementia           |                             |                                  | 0.6††                           |
|                                |                             |                                  | 1.25††                          |
|                                |                             |                                  | 1.5††                           |
| **Depression**                 | 7                           | 2                                | 21                               |
|                                |                             |                                  | 58b                             |
| **Cognition**                  | 8                           | 0                                | NA                              |
| **Functional status (ADL, IADL)** | 5                         | 1                                | 67b                             |
| **Perceived health**           | 1                           | 0                                | NA                              |
| **Quality of life**            | 3                           | 1                                | 0.31††                          |
| **Mortality**                  | 3                           | 1                                | 0.23††                          |
| **Service use**                |                             |                                  |                                 |
| **Hospitalization rate**       | 5                           | 2                                | 0.01521                         |
|                                |                             |                                  | 1.3††                           |
| **Nursing home placement**     | 11                          | 3                                | 0.1848                          |
|                                |                             |                                  | 0.26††                          |
|                                |                             |                                  | 64b                             |
| **Length of hospital stay**    | 2                           | 2                                | 0.22448                         |
|                                |                             |                                  | 1.9††                           |
| **Emergency department visit** | 3                           | 1                                | 0.1721                          |
| **Outcomes for caregivers**    |                             |                                  |                                 |
| **Burden**                     | 11                          | 4                                | 0.0356                          |
|                                |                             |                                  | 0.2948                          |
|                                |                             |                                  | 1.1721                          |
|                                |                             |                                  | 58b                             |
| **Depression**                 | 10                          | 5                                | 0.0445                          |
|                                |                             |                                  | 0.1845                          |
|                                |                             |                                  | 1.05††                          |
|                                |                             |                                  | 1.5††                           |
| **Strain**                     | 1                           | 1                                | 0.1845                          |
| **Perceived health**           | 6                           | 2                                | 0.2448                          |
|                                |                             |                                  | 0.41††                          |
| **Quality of life**            | 6                           | 2                                | 0.2848                          |
|                                |                             |                                  | 0.9721                          |
| **Satisfaction**               |                             |                                  |                                 |
| Caregivers                     | 5                           | 1                                | 22b                             |
| Health care professionals      | 1                           | 0                                | NA                              |
| Cost-effectiveness             | 5                           | 0                                | NA                              |
| Other outcomes                 |                             |                                  |                                 |
| **Medication management**      | 1                           | 1                                | 1.07††                          |
| **Adherence to dementia**      | 1                           | 1                                | 0.65††                          |
| **guidelines**                 |                             |                                  |                                 |
| Dementia detection rate        | 1                           | 1                                | 0.47††                          |

ADL = activities of daily living; IADL = instrumental activities of daily living; NA = not applicable.

a Effect size: <0.2 = weak effect; 0.2-0.5 = small effect; 0.5-0.8 = intermediate effect; >0.8 = large effect.

b Insufficient data to calculate the effect size (eg, number of participants missing in comparison groups, only
textual information).
DISCUSSION
This systematic mixed studies review is the first to assess relationships between the key outcomes of case management and barriers to its implementation for patients with dementia in CBPHC. Previous systematic reviews highlighted the discrepancy of the outcomes across dementia case management interventions and questioned the efficacy of this intervention to produce desired clinical and service use outcomes. 4,24,27

The main novelty and strength of our review are to integrate findings of studies with diverse designs so we can identify possible causes of this discrepancy and conditions that can help increase the overall efficacy of dementia case management.

According to Grol et al, 10 implementation barriers affect outcomes, and they have been insufficiently studied. 45 Interpretations of outcomes depend on how well the intervention was designed and implemented in the care setting. 31 A good implementation is associated with a better likelihood that programs will achieve more prominent results and superior benefits for participants. 31 Thus, to explain the limited efficacy of case management, we identified barriers to its implementation at the level of the organization, the health care clinician, and the innovation. In addition, our configurations have shown that interventions that better address barriers produce more-positive outcomes. Finally, 2 key conditions with the most important influence on the case management outcomes were identified: high-intensity case management is associated with positive clinical outcomes and optimized service use, and effective communication is associated with positive outcomes for caregivers.

Our results suggest that intensity of case management is a key factor for effective patient and service use outcomes. The main characteristics of high-intensity case management are (1) a small caseload (50 patients per full-time case manager), 46 (2) regular meetings with patients and their caregivers (50% of which are devoted to in-person communication), (3) education on health conditions, (4) close contact with family physicians, 93 and (5) proactive and timely follow-up. 94 In addition, case managers can play an important role in transitional care by following up with patients during hospitalizations and short-term institutionalizations. 99

Another key factor in obtaining positive outcomes is effective communication among health care professionals (transparent referral system, regular meetings, web-based tracking system). 96,97 Effective case management requires individuals with communication and collaboration skills. 98 Caregivers need help “navigating in the system,” especially at the onset of the disease, 99 and they expect appropriate communication among health care professionals. Caregivers also need to be closely involved in the decision-making process. 100 Our results suggest effective communication is also essential to improve outcomes for caregivers who are at risk of adverse outcomes (depression and increased mortality). 101 Because a person with dementia may move to a long-term care facility sooner than anticipated when a caregiver experiences an intolerable level of stress, providing support to caregivers has a major effect on patient outcomes and service use. 102

Limitations
It is possible that a study was not identified as a result of the search terms we used. We did not conduct a meta-analysis, because case management interventions have a variety of main components and involved health care professionals. The intrinsic nature of the configurational comparative method to split the evidence into subsets of studies with common conditions is another limitation. Furthermore, information on monitoring implementation and the actual level it achieved can be sparse or omitted from the original reports. These limitations can affect the overall generalization of our findings but do not prevent us to provide a portrait of the researched phenomenon.

Recommendations
It is essential to evaluate case management implementation in health care facilities. This evaluation should precede the assessment of outcomes so that any corrective actions can be undertaken, ideally at least 6 months after implementation, during the engagement period. Two key conditions should be taken into account. First, there should be high-intensity case management (small caseload, regular proactive patient-caregiver follow-up, and regular contact between case managers and family physicians or specialists). Second, there must be effective communication among all health care professionals and services caring for patients with dementia and their caregivers, including community-based organizations (eg, Alzheimer Association). Effective communication relies on an efficient referral system (eg, a Web-based tracking system) and timely support of family physicians and case managers by specialists in complex cases. Locating a case manager in the primary care facility can facilitate interaction and support.

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Key words: case management; dementia; community-based primary health care; systematic mixed studies review; configurational comparative method

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