Case Management, Preventive Strategies, and Caregiver Attitudes Among Older Adults in Home Care: Results of The ADHOC Study

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Background: Among older adults, integration of health services in a continuum of care with case management programs was shown to reduce progression of functional decline, hospitalization, and institutionalization. We hypothesized that such an approach may also result in a higher rate of use of preventive strategies and lower caregiver distress.

Methods: Data were from the baseline assessment of the AgeD in HOme Care project, a study enrolling subjects aged 65 years or older receiving home care in Europe. Preventive strategies considered were: (1) blood pressure measured in the last 2 years; (2) influenza vaccination in the last 2 years; (3) medication reviewed in the last 180 days.

Results: Mean age of participants was 82.3 years and 2971 (74%) were women; 1539 (38%) received home care program based on case management. Overall, 1350 (88%) of 1539 participants in the case manager group and 2046 (83%) of 2468 of those in the no case manager group had blood pressure measured in the last 2 years (P < .001). After adjusting for potential confounders, this result was still statistically significant (OR 1.31, 95% CI: 1.08–1.59). Similarly, more participants in the case manager groups received influenza vaccination (1083/1539 [70%] versus 1293/2468 [52%], P < .001) and had medication reviewed (312/1539 [20%] versus 356/2468 [15%], P < .001) compared with those in the no case manager group and these associations were confirmed after adjusting for confounders (OR: vaccination 2.08, 95% CI: 1.81–2.39; medication review 1.69, 95% CI 1.42–2.01). Furthermore, the caregivers of subjects in case manager group were less likely to be unable to continue in caring activities (49/1320 [4%] versus 134/2129 [6%], P = .01) and less dissatisfied (28/1320 [2%] versus 83/1129 [4%], P < .001) compared with those in the no case manager group.

Conclusions: Home care services based on case management approach result in a higher rate of use of preventive strategies and lower burden for caregivers. (J Am Med Dir Assoc 2008; 9: 337–341)

Keywords: Home care; case manager; influenza vaccination; medication review; blood pressure; caregiver attitudes

Preventive medicine in older people can not only reduce premature morbidity and mortality but also preserve function and quality of life.1 Blood pressure measurement can identify older adults at increased risk for cardiovascular disease; influenza vaccination improves quality of life, reduces morbidity, mortality, and hospitalization, and represents a cost-effective preventive measure3,4; and periodic medication review can prevent falls and adverse drug events.5,6

Despite this evidence, preventive strategies are not sufficiently implemented in older adults.7–9 This may be related to the fact that the responsibility of various health professionals for the care management of older people living in the community remains poorly defined. Several studies suggest that a possible solution may be the integration of medical and social services in a continuum of care with case management programs.10,11 A study by Williams et al12 in 1973 demonstrated an extraordinary benefit and cost saving from a comprehensive evaluation of individuals judged to need long-term care placement. More recently, in the United States the Program for All-inclusive Care of the Elderly (PACE) has been hailed as a model of integrated care for elderly persons who are covered by both Medicare and Medicaid, and who are eligible
for nursing home care but remain living in the community. This program is based on the integration of services, achieved through consolidated case management by the multidisciplinary team (responsible both for managing cases and for dispensing services). A case manager supports and integrates the activity of general practitioners, performing a comprehensive geriatric assessment and implementing individualized care plans. We hypothesized that presence of a case manager can result in a more careful assessment of patients' needs and lead to greater attention being paid to preventive health strategies and better caregiver attitudes. The aim of the present study was to assess if, in a group of older adults living in the community in Europe, presence of a case manager was associated with a higher use of preventive health strategies (including influenza vaccination, blood pressure measurement, medication review) and a lower caregiver distress.

METHODS

Study Population

The study population consisted of a random sample of elders admitted to the home care programs in 11 different European Home Health Agencies between 2001 and 2003 and who participated in the AgeD in HOME Care (AD-HOC) project, under the sponsorship of the European Union. The AD-HOC project analyzed the structure and organizational characteristics of home care services in 11 European countries, along with the clinical and functional characteristics of their clients. The home care clients were assessed in the following urban areas: Prague (Czech Republic), Copenhagen (Denmark), Helsinki (Finland), Amiens (France), Nurnberg and Bayreuth (Germany), Reykjavik (Iceland), Milan (Italy), Rotterdam (The Netherlands), Oslo (Norway), Stockholm (Sweden), and Maidstone and Ashford (United Kingdom). For each site, a sample was obtained from a randomized list of all subjects aged 65 years or older already receiving home care services. When specific services (eg, “integrated” or “social” only) were provided by different agencies, the sample from each agency reflected the overall proportion of clients receiving the services of interest.

All persons in the sample were assessed by a trained staff that collected data on the Minimum Data Set for Home Care (MDS-HC) form following the guidelines published in the MDS-HC manual. In Finland, France, Germany, and Iceland assessments were conducted by agency personnel, while in all other countries, they were conducted by research assistants recruited for the project. All received standardized training on how to complete the assessment instrument.

Ethical approval for the study was obtained in all countries according to local regulations. Individuals invited to take part in the study were free to decline participation and confidentiality was ensured.

MDS-HC Assessment Data

The MDS-HC contains over 350 data elements including sociodemographic variables and numerous clinical items about both physical and cognitive status, as well as clinical
diagnoses. The MDS-HC also includes information about an extensive array of signs, symptoms, syndromes, and treatments being provided. A variety of different, multi-item summary scales are embedded in the MDS-HC measuring, for example, physical function (activities of daily living [ADLs]) and cognitive status (cognitive performance scale [CPS]). Behavioral symptoms were present if the participant exhibited one or more of the following symptoms in the 3 days prior to assessment: wandering, being verbally or physically abusive, demonstrating socially inappropriate behavior, and actively resisting care. MDS items have been found to have excellent inter-rater and test-retest reliability when completed by nurses performing usual assessment duties (average weighted Kappa = 0.8).

Case Management

Case managers were involved in home care in Finland, Iceland, Italy, Sweden, and the United Kingdom. In these countries the case managers, trained on the “core tasks” of case management, represented the operational arm of the community geriatric evaluation unit. Case managers were nurses, trained through national courses on case management and comprehensive geriatric assessment. Case managers performed the initial assessment of the patient using the MDS and were available to deal with problems that arose, monitor the provision of services, and provide additional services as requested by participants. In addition, together with the geriatric evaluation unit, they designed and implemented an individualized care plan, and determined the services that each person was eligible for. The approved services were then provided by a multidisciplinary team with the case manager facilitating the integration of services provided by social and health care professionals. In Iceland there was not a formal case manager system but home care nurses acted in a similar way and in that role cooperated with the personal family doctor. Home care was based on a traditional approach and did not include the use of case managers in Czech Republic, Denmark, France, Germany, the Netherlands, and Norway.

Preventive Health Care Measures

Participants were asked the following:

1. if they had their blood pressure measured at any time in the last 2 years. This question was based on current recommendation on screening for high blood pressure.
2. if they received an influenza vaccination in the last 2 years.
3. if they discussed with a physician their medications as a whole in the last 180 days.

If the participant was not able to report data on these health care measures, information was obtained either from family member, caregiver, or participant physician.

Caregiver Attitudes

The measures of caregiver attitude were those included in the MDS-HC form. The caregiver measures were defined as follows: (1) the caregiver was unable to continue in caring
activities due to declines in his or her own health; (2) the
caregiver expressed feelings of distress, anger, or depression;
and (3) the caregiver was dissatisfied with the support re-
ceived from family and friends. Measures 1 and 2 may be
considered measures of personal burden, whereas measure 3
may be considered interpersonal burden.

Analytic Approach

Baseline characteristics of study participants were com-
pared using analysis of variance (ANOVA) for normally
distributed variables, nonparametric Kruskal-Wallis H tests
for skewed variables, and chi-square analyses for dichotomous
variables.

Generalized estimating equations were used to estimate the
association of case manager with preventive strategies and
caregiver attitudes. The generalized estimating equation
method adjusts for the correlation among study participants
residing in the same country. Also, participants’ sociodemo-
graphic characteristics (age and gender) as well as those
variables associated with the presence of a case manager at the
univariate analyses—at P = .10—were included as indepen-
dent variables and entered into the multivariate models.
Analyses were performed using SAS statistical software, ver-

RESULTS

Overall, 4007 elders were included in the study: 1539
(38%) participants received a home care program based on
case management and 2468 (62%) received a traditional care
approach (no case manager group). Mean age of all study
participants was 82.3 years (SD 7.3) and 2971 (74%) were
women.

Characteristics of the study population in the 2 groups are
summarized in Table 1. Compared with persons in the case
manager group, those in the no case manager group were
older, more likely to be women and to live alone, had a higher
cognitive performance scale score (meaning more severe cog-
nitive impairment), a higher prevalence of behavioral symp-
toms and financial problems, a lower number of coexisting
diseases and a lower prevalence of ADL disability, and hos-

tital admission in the last 6 months. Presence of informal
caregiver did not differ significantly in the 2 study groups.

As shown in Table 2, 1350 (88%) of 1539 participants in
the case manager group and 2046 (83%) of 2468 of those in
the no case manager group had blood pressure measured in the
last 2 years (P < .001). After adjusting for potential con-
founders, this result was still statistically significant (Adjusted
Odds Ratio (OR) 1.31, 95% Confidence Intervals (CI): 1.08–
1.59). Similarly, more participants in the case manager groups
received influenza vaccine in the last 2 years (1083/1539
[70%] versus 1293/2468 [52%], P < .001) and had medication
reviewed in the last 6 months (312/1539 [20%] versus 356/
2468 [15%], P < .001), compared with those in the no case
manager group and these associations were confirmed after
adjusting for confounders (Adjusted OR: vaccination 2.08,
95% CI: 1.81–2.39; medication review 1.69, 95% CI: 1.42–
2.01).

Finally, we tested the association between the presence of
case management and caregiver attitudes. Table 3 shows that
the caregivers of subjects in case manager group were less
likely to be unable to continue in caring activities (49/1320
[4%] versus 134/2129 [6%], P = .01) and less dissatisfied
(28/1320 [2%] versus 83/1129 [4%], P < .001) compared with
those in the no case manager group. These associations were
confirmed after adjusting for potential confounders. No sig-
ificant difference was observed for the domain regarding the
caregiver distress.

DISCUSSION

This study demonstrates that an integrated community care
program implemented by an interdisciplinary team including
a case manager is associated with a higher rate of use of
preventive strategies and lower burden for caregivers. Case
managers were trained to perform a comprehensive geriatric
assessment and to design and implement individualized care
plans. They also determined services that each person was
eligible to receive. In such a model the case manager supports
and integrates the activity of general practitioners, represent-
ing the gatekeeper to health care services. Therefore, the case
manager approach offers a single community “setting” the
patients can refer to, regardless of specific needs and diseases. Case managers can help elders to become more compliant with medications and with rehabilitation and/or occupational therapy programs, as well as preventive strategies. A close collaboration among case managers, community geriatric evaluation units, and general practitioners is critical to the success of this approach. As a consequence, caregivers are more satisfied of the health care and assistance received and they seem to suffer less of a burden for caring activities.

The case management approach has been shown to be a crucial link between the assessment of medical and social services and the allocation of health care resources. A review of case management programs used to deliver primary care to elders with heart failure, diabetes, and mixed comorbidities found that most showed improved outcomes compared with controls. Furthermore, a case management approach resulted in less progression of functional decline in persons in the community and reduced permanent nursing home stays compared with controls. Also, results of randomized clinical trials showed that primary care coupled with a case manager approach can prevent hospitalization and institutionalization leading to a reduction in health care expenditures. Based on our findings, we may therefore hypothesize that part of these health benefits may be obtained through a higher use of preventive strategies and lower caregiver burden.

In our study, hours of formal support, which also include case manager visits, did not differ significantly between study groups and this finding may raise concern about the entity of care provided by case managers. Unfortunately data on hours of assistance provided by case manager were not collected in the study, but this finding may be related to 2 factors. First, participants in the case manager group may have a lower need of formal care and this may have masked differences related to care provided by case managers. Indeed, participants in the case manager group were less impaired than those in the no case manager group, as shown by that they were slightly younger, had a lower CPS score, and lower rate of behavioral symptoms. In addition, participants in the case manager group were less likely to live alone compared with other participants and therefore they have probably received more informal support. Second, it may be hypothesized that presence of case manager rationalized the way formal support was provided, lowering the number of unnecessary services and therefore resulting in a reduction of hours of formal support.

The ADHOC project is the first research study to examine the characteristics of recipients of community care services in European countries in a comparable manner. Data were generated by the use of a common comprehensive standardized assessment instrument, namely the MDS-HC, created by an international multidisciplinary research collaboration. In an increasingly unified European Union, the ADHOC study has

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<th>Table 2. Association Between Case Manager and Preventive Health Care Measures</th>
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<td>Blood pressure measured</td>
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<td>No case manager (n = 2468)</td>
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<td>Case manager (n = 1539)</td>
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<tr>
<td>Influenza vaccination</td>
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<td>No case manager (n = 2468)</td>
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<td>Case manager (n = 1539)</td>
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<td>Medication review</td>
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<td>No case manager (n = 2468)</td>
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<td>Case manager (n = 1539)</td>
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* Adjusted for age, gender, living alone, Cognitive Performance Scale score, number of impaired activities of daily living, presence of behavioral symptoms, number of diseases, hospitalization in the past 6 months, and financial problems.

<table>
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<th>Table 3. Association Between Presence of Case Manager and Caregiver Attitudes</th>
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<td>Caregiver unable to continue in caring activities</td>
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<td>No case manager (n = 2129)</td>
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<td>Case manager (n = 1320)</td>
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<td>Caregiver dissatisfied</td>
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<td>Case manager (n = 1320)</td>
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<td>Caregiver distressed</td>
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<td>No case manager (n = 2129)</td>
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<td>Case manager (n = 1320)</td>
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the potential to look at outcomes and services across nations. Patient-based, risk-adjusted outcome reports would not only assist agencies in planning but would also provide governments with the opportunity to design cost-effective services of the highest quality.26,27

Some limitations of the present study need to be addressed. Although we adjusted the analyses for many factors, the possibility of residual confounding factors remains a possibility. In particular we had no information to adjust for specific organizational and structural characteristics of countries and local health care systems that may have been related to the outcomes under study. In addition, we had no data on several patients’ characteristics, which may affect use of preventive strategies, and on structural and organizational characteristics of local health care systems. Finally, the ADHOC sample population was composed of older adults receiving home care in Europe, so our results may not be applicable to other age groups and nations.

In conclusion, home care services based on the full integration of case managers with general practitioners and geriatric evaluation units can result in a higher rate of use of preventive strategies and lower caregiver burden. Further analyses are needed to define the specific groups of elders that are most effectively targeted by such home care programs and to confirm the positive impact of case management on clinical outcomes and health care costs.

REFERENCES