Preliminary Data from the Caring for Older Adults and Caregivers at Home (COACH) Program: A Care Coordination Program for Home-Based Dementia Care and Caregiver Support in a Veterans Affairs Medical Center

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Caring for Older Adults and Caregivers at Home (COACH) is an innovative care coordination program of the Durham Veteran's Affairs Medical Center in Durham, North Carolina, that provides home-based dementia care and caregiver support for individuals with dementia and their family caregivers, including attention to behavioral symptoms, functional impairment, and home safety, on a consultation basis. The objectives of this study were to describe the COACH program in its first 2 years of operation, assess alignment of program components with quality measures, report characteristics of program participants, and compare rates of placement outside the home with those of a nontreatment comparison group using a retrospective cohort design. Participants were community-dwelling individuals with dementia aged 65 and older who received primary care in the medical center's outpatient clinics and their family caregivers, who were enrolled as dyads (n = 133), and a control group of dyads who were referred to the program and met clinical eligibility criteria but did not enroll (n = 29). Measures included alignment with Dementia Management Quality Measures and time to placement outside the home during 12 months of follow-up after referral to COACH. Results of the evaluation demonstrated that COACH aligns with nine of 10 clinical process measures identified using quality measures and that COACH delivers several other valuable services to enhance care. Mean time to placement outside the home was 29.6 ± 14.3 weeks for both groups (P = .99). The present study demonstrates the successful implementation of a home-based care coordination intervention for persons with dementia and their family caregivers that is strongly aligned with quality measures. **J Am Geriatr Soc 63:1203–1208, 2015.**

Key words: care coordination; dementia caregiving; caregiver support; behavioral and psychological symptoms of dementia; quality measures

In 2013, an estimated 5 million older adults aged 65 and older had Alzheimer's disease; this number is projected to triple by 2050, to as high as 13.8 million people.[1] Dementia causes a high burden of suffering among affected individuals and their caregivers through progressive disability, caregiver strain, and high rates of institutionalization despite strong preferences of older adults to remain at home.[2] Accordingly, improving dementia care has been identified as a national priority.[3]

The Caring for Older Adults and Caregivers at Home (COACH) program is an innovative clinical program that provides consultative home-based dementia care coordination for patient–caregiver dyads. Developed and implemented at the Durham Veterans Affairs (VA) Medical Center (DVAMC) in Durham, North Carolina, in 2010, the program's overarching goals are to provide high-quality dementia care and caregiver support to individuals with dementia and their caregivers and to enable individuals to live at home for as long as possible.

The specific aims of this article are to describe the COACH program in its first 2 years, assess the program's alignment with quality measures, and report participant characteristics and rates of placement outside the home 12 months after enrollment.

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PROGRAM DESCRIPTION

Target Population

The target population is dyads of community-dwelling elderly veterans with dementia and their family caregivers. Veteran eligibility criteria include aged 65 and older, dementia diagnosis with behavioral disturbance or functional impairment, living at home within 50 miles of DVAMC, having a live-in caregiver, and having a VA primary care provider (PCP). Veterans are ineligible if they are enrolled in other home-based VA programs including Home-Based Primary Care and home hospice or if they are in process of being placed. Individuals are identified through provider referral.

Staff Roles and Program Processes

A social worker (SW) and registered nurse (RN), both with geriatric experience, are dedicated to COACH full time and provide the program's hands-on care through telephone and home visits with support from an interdisciplinary team (IDT). After an initial home visit, the SW and RN present cases at a weekly IDT meeting, which also includes a geriatrician, geriatric psychiatrist, and geriatric pharmacist. The IDT formulates a plan comprising interventions for implementation by the SW and RN and recommendations to PCPs, who continue to provide general medical care (Table 1). Plans are communicated to PCPs through notes in the electronic record, with PCPs designated as additional signers to the notes.

Dyads are supported in implementation of the plan through close communication involving ongoing iterative modifications to the plan. Follow-up telephone or home visits (individualized decision) occur 1, 3, and 6 months after enrollment at a minimum and more frequently if needed. Telephone visits occur every 3 months thereafter, and additional home visits occur annually and after hospitalization or a change in condition. Veterans and caregivers can also initiate contact with the SW and RN over the telephone between these intervals. Follow-up notes and recommendations continue to be entered in the electronic record for PCP signature. Dyads are followed as long as the veteran remains at home. The program also features an optional monthly caregiver support group at DVAMC, with a concurrent recreational therapy session for veterans.

EVALUATION METHODS

COACH was a clinical demonstration program that the Veterans Health Affairs (VHA) Office of Geriatrics and Extended Care deemed to be an operational activity and thus not subject to institutional review board review.

The main goals of the evaluation were to describe alignment of program components with dementia management quality measures, determine characteristics of program participants, and compare time to placement outside the home of COACH participants with that of a nontreatment group of individuals who were referred to the program and who met all clinical eligibility criteria but lived outside of the service area or declined to enroll. The comparison group is hereafter referred to as the referred group.

Measures

Dementia Management Quality Measures

COACH program components were assessed for alignment with evidence-based clinical processes identified by an interdisciplinary, multisociety Dementia Measures Work Group convened by the American Medical Association. The Dementia Management Quality Measures (DMQMs) consist of 10 clinical performance measures, inclusive of all stages of dementia, and are intended to define optimal dementia care and guide quality improvement.[4]

Participant Characteristics

Baseline demographic characteristics measured for all veterans included age, sex, race, marital status, and annual income. Baseline comorbidity count was identified from *International Classification of Diseases, Ninth Revision*, codes for 14 common chronic conditions included in the Care Assessment Needs score, a validated tool for predicting readmission of VHA patients.[5] Data were obtained from VHA administrative records. Baseline dementia severity was assessed through chart review for Mini-Mental State Examination (MMSE)[6] scores performed up to 18 months before referral.

Additional baseline information collected for COACH dyads included veteran level of education, functional impairment, and behavioral disturbance and caregiver age, relationship to veteran, and caregiver strain level. Functional impairment was assessed using the 6-point Physical Self-Maintenance Scale for activities of daily living (ADLs).[7] Caregiver strain was assessed using a 13-point scale based on the Modified Caregiver Strain Index.[8] Behavioral disturbance was measured using a 16-point scale based on the Agitated Behaviors in Dementia Scale,[9] assessing for the presence of 16 behaviors over the 2 weeks before the assessment.

Placement Outside the Home

A quasi-experimental retrospective cohort design was used to examine whether an association exists between receiving the COACH intervention and time to placement outside the home, defined as permanent placement in a skilled nursing or assisted living facility within 12 months after referral, excluding rehabilitation, respite stays, and acute hospice placement. A study physician (MFD) determined time to placement, in weeks, through chart review, which was then evaluated using a time-to-event analysis. Time at risk was censored for death, relocation outside the service area, disenrollment, or indeterminate placement status. Kaplan–Meier curves were constructed to illustrate the comparison between time to placement between the groups, and the log rank test was used to assess the statistical difference between groups. Statistical tests were performed using SAS version 9.3 (SAS Institute, Inc., Cary, NC).

RESULTS

From August 2010 to May 2012, 210 veterans were referred to COACH. Of 155 who met eligibility criteria, 133 enrolled. Of the 55 ineligible veterans, 17 met all

Table 1. Caring for Older Adults and Caregivers at Home (COACH) Program Assessments and Interventions with Corresponding Dementia Management Quality Measures[a]

Dementia Management Quality Measure	COACH Program Assessment Delivery Method (Tool, if applicable[b])	Interval	COACH Program Interventions	
			Direct Action	Recommendations to PCP[c]
1. Staging of dementia	Not formally undertaken, but implicit in all aspects of care coordination	Enrollment, ongoing		
2. Cognitive assessment	Cognitive testing (instrument used)	Enrollment, every 12 months	Document in electronic medical record	
3. Functional status assessment	Caregiver interview (instruments used)	Enrollment, every 12 months, after hospitalization	Order durable medical equipment (e.g., grab bars, shower chair, bedside commode), implement toileting schedule	Consultations for occupational therapy, physical therapy, homemaker or home health aide
4. Neuropsychiatric symptom assessment	Caregiver interview (instrument used)	Enrollment, every 6 months	See next (#5)	See next (#5)
5. Management of neuropsychiatric symptoms	N/A	Enrollment, ongoing and individualized	Education session about communication techniques (nonverbal communication, mood mirroring, confrontation avoidance, reassurance, redirection, distraction, validation), with multiple reinforcement sessions; individualized strategies for nonpharmacological management of behavioral and psychological symptoms of dementia; caregiver handouts covering 13 behavioral problems; geriatric psychiatry referral	Refer to geriatric psychiatry
6. Screening for depressive symptoms	Patient and caregiver interview (instrument used)	Enrollment, ongoing and individualized	Nonpharmacological strategies, refer to geriatric psychiatry	PCP to assess and refer to geriatric psychiatry
7. Counseling regarding safety concerns	Observation (home visit) and interview for dementia-specific home safety assessment, firearms screening, falls screening	Enrollment, ongoing and individualized	Education and counseling, recommend home modifications, order home safety equipment (e.g., door chimes, identification or medical alert bracelet, see also #3), assistive device education regarding proper use and cueing	Ramp consultation, medical recommendations related to falls and fracture risk reduction
8. Counseling regarding risks of driving	Caregiver and patient interview	Enrollment, ongoing and individualized	Education and counseling, assistance with transportation planning and resources	Notify Department of Motor Vehicles
9. Palliative care counseling and advance care planning	Caregiver and patient interview	Enrollment, ongoing and individualized	Education and assistance completing advance directive, assistance strategizing to meet current and future level of care needs	Refer to hospice

(Continued)

Table 1 (Contd.)

Dementia Management Quality Measure	COACH Program Assessment Delivery Method (Tool, if applicable[b])	Interval	COACH Program Interventions	
			Direct Action	Recommendations to PCP[c]
10. Caregiver education and support	Caregiver interview	Enrollment, ongoing and individualized	Education on dementia disease management, caregiving skills, and techniques for self-care; provide and instruct in use of caregiver journal to record questions; monthly support group; respite referrals; individualized supportive counseling; assistance filling out forms and applying for Veterans Affairs and community resources	Respite referrals (in-home or inpatient, adult day health center)
Other[d]				
Caregiver assessment	Caregiver interview to assess caregiver burden (instrument used), depression (instrument used), health status, health literacy, stressors and needs, coping ability, knowledge of dementia, resources (e.g., financial, social support, community resources)	Enrollment, ongoing and individualized (every 12 months for caregiver burden)	See previous (#10)	See previous (#10)
Medication assessment	Detailed medication review by nurse and geriatric pharmacist including assessment of anticholinergic burden (instrument used), caregiver interview to assess adherence and knowledge of regimen	Enrollment, every 12 months	Individualized caregiver education, provide pill box	Medication adjustments
Delirium assessment	Caregiver and patient interview (instrument used)	Enrollment, as needed	As indicated	As indicated
General medical assessment	Chart review, interview, examination: past medical history, review of systems, pain, physical exam	Enrollment, as needed	As indicated	As indicated
Sleep hygiene	Caregiver and patient interview for detailed assessment	Enrollment, every 6 months	Implementation of sleep hygiene plans	As indicated
Care transitions support	Home visit to assess for changes in patient function and caregiver needs	After hospitalization or rehabilitation stay when possible	As indicated	As indicated

[a] Dementia Management Quality Measures outlined by Dementia Measures Working Group, 2014.[4]
[b] Validated tools and assessment instruments used by the COACH Program are available from the authors upon request.
[c] COACH registered nurse can enter physician orders for certain recommendations to primary care physicians (PCPs) electronically for co-signature by PCP.
[d] Other domains that the COACH program addresses beyond those included in Dementia Management Quality Measures.

eligibility criteria except residing within the service area. These veterans were combined with 12 who met all eligibility criteria but declined enrollment (and did not subsequently enroll during the study period), totaling 29 individuals in the referred comparison group.

Dementia Management Quality Measures

COACH uses systematic clinical processes for dementia management, including assessment with evidence-based tools at consistent intervals. The program aligns with nine of 10 DMQM clinical process measures and delivers several additional care processes (Table 1), together encompassing clinical assessments, management of neuropsychiatric symptoms, safety, palliative care and end of life, and caregiver concerns. COACH does not formally document dementia severity staging, although this can easily be adopted as a formal care process.

Participant Characteristics

COACH participants and the referred group had similar baseline demographic and clinical characteristics (Table 2). Nearly all of these veterans were male, and most were over age 80, white, and married. Both groups were of similarly modest socioeconomic status as indicated by mean income, and both had high levels of comorbid disease, averaging four chronic diseases each. The most common diagnoses in COACH participants were hypertension (88%), depression (37%), diabetes mellitus (37%), ischemic heart disease (35%), and chronic obstructive pulmonary disease (17%). Dementia severity was similar, with both groups having a mean MMSE score of 16 ± 6, reflecting moderate severity.

COACH participants had high levels of behavioral disturbance, with 79% having one or more active behavioral problems; high levels of functional impairment, with 4.1 ± 2.0 mean ADL impairments; and low education level, with 19% reporting less than high school education. Mean caregiver age was 70.0 ± 13.3, with bimodal distribution and substantial missing data; 60% were wives, and 25% were daughters. Fifty-five percent of caregivers had high levels of strain, defined as modified Caregiver Strain Index scores of 7 or greater.

Table 2. Baseline Comparison of Demographic Characteristics

Characteristic	COACH, n = 133	Referred, n = 29
Age at referral, mean ± SD	82.5 ± 5.9	81.3 ± 7.9
Female, n (%)	2 (1.5)	1 (3.6)
Black, n (%)	47 (36.4)	11 (37.9)
Married (n, %)	90 (68)	20 (69)
Annual income, mean ± SD $	27,500 ± 17,800	22,000 ± 11,800
Chronic disease count, mean ± SD[a]	3.8 ± 1.7	4.1 ± 1.8
Mini-Mental State Examination score (range (0–30)		
Mean ± SD	16 ± 6	16 ± 6
≥20, %	21	25
11–19, %	58	56
≤10, %	20	19

COACH = Caring for Older Adults and Caregivers at Home; SD = standard deviation.

[a]Of 14 total diagnoses that constitute the Care Assessment Needs score.[5]

Placement Outside the Home

Of 133 COACH participants, 24 were placed during the 12-month follow-up period (mean time to placement 29.6 ± 14.3 weeks), 27 died, 78 remained at home, and four had indeterminate status. Of 29 referred individuals, five were placed (mean time to placement 29.6 ± 14.0 weeks), five died, 16 remained at home, and three had indeterminate status. Kaplan–Meier curves depicting time to placement outside the home in both groups were similar ($P = .99$).

DISCUSSION

These results provide evidence of the successful, feasible implementation of the COACH program as a novel strategy for dementia care and caregiver support by augmenting office-based primary care with consultative SW and RN-led care coordination delivered to veterans and caregivers in their homes. No statistically significant difference was found in time to placement outside the home between veterans enrolled in the COACH program and the referred comparison group, but many stakeholders have nonetheless deemed COACH valuable. COACH has been adopted as a permanent program at DVAMC and has undergone expansion and dissemination to two DVAMC community clinics.

COACH is unique and differs from existing dementia care programs in a few important ways. Other notable IDT-based care management programs[10] and caregiver support interventions[11,12] have focused primarily on management of neuropsychiatric symptoms and caregiver education and support. To these critical domains, COACH adds a unique emphasis on supporting function and home safety through in-home assessment and intervention strategies, and COACH encompasses medical and social resource needs for dyads to deliver truly comprehensive care coordination. High-quality dementia care coordination has the potential to enhance guideline-concordant care, reduce fragmentation, and subsequently improve health outcomes for veterans and caregivers.[13] Indeed, program evaluation demonstrated that COACH's systematic approach to dementia care management aligned with nearly all quality measures established by a multidisciplinary dementia workgroup[4] and was more comprehensive than this minimum standard for high-quality dementia care. The program is distinct from another recently reported VA dementia care coordination program that integrates medical and social needs of dyads[14] in the use of home visits, IDT support, and systematic interface with PCPs as a core program component.

Characterization of program participants underscored the high needs and vulnerable nature of the target population. Behavioral and psychological symptoms of dementia (BPSD) occur in up to 90% of individuals during the disease course[15] and are highly correlated with institutionalization, mediated by caregiver burden.[16,17] COACH participants had high levels of BPSD, functional impairment, and caregiver strain, highlighting the need for targeting behavioral symptoms and caregiver burden simultaneously.[18,19] Appropriate identification of these veterans as having high needs,

based on ADL impairments and dementia severity, resulted in greater VA system financial resource allocation to DVAMC, enhancing program feasibility.

The lack of a statistically significant difference between groups in time to placement may reflect a lack of program effect on placement outcomes, consistent with findings about other dementia programs described in the literature,[10,11,20] although limitations of the study undermine the certainty of this conclusion. Small sample size limited the study's statistical power. Furthermore, it was not possible to control for potential unmeasured confounding factors that may have differed between groups, such as behavioral disturbance, functional impairment, and caregiver strain. Additionally, the program was constantly evolving in its early stages, such that these evaluation results may not be representative of the quality of delivery ultimately reached. Similarly, it was not possible to examine the relationship between dosage of the intervention or PCP uptake of recommendations and outcomes in this preliminary study. The study was also limited in that caregiver strain outcomes were not evaluated; the available clinical data were of insufficient quality for analysis. However, caregiver satisfaction was rated highly by 96% of caregivers in a satisfaction survey.

Future directions include measurement of additional patient-centered outcomes, including behavioral disturbance, function, quality of life, and caregiver depression, and evaluation of the dose of program components with regard to outcomes. With the prevalence of dementia and caregiver burden projected to triple in the coming decades, the need for improved care models is greater than ever. The COACH program represents a promising avenue for improving home-based dementia care coordination.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Table S1. Dosage of home and telephone visits to COACH participants during 12 months of follow-up (n = 133).

Table S2. Proportion of COACH participants receiving various support services during 12-month follow-up.

Table S3. Sample of comments from Caregiver Satisfaction Survey.

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