

The Cleveland Alzheimer's Managed Care Demonstration: Outcomes After 12 Months of Implementation

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Purpose: This demonstration evaluates the effects of integrating Alzheimer's Association care consultation service with health care services offered by a large managed care system. The primary hypothesis is that Association care consultation will decrease service utilization, increase satisfaction with managed care, and decrease caregiver depression and care-related strain. Secondary modifying-effects hypotheses posit that the effects of the intervention will be intensified when patients have not received a firm dementia diagnosis, patients have more severe memory problems, caregivers use other Association services in tandem with care consultation, and caregivers are not patients' spouses. **Design and Methods:** The demonstration is a randomized trial that examines outcomes after a 12-month study period. Interview data from 157 primary family caregivers are combined with data abstracted from medical/administrative records. **Results:** Support for the primary hypothesis is found for selected, but not all, service utilization outcomes and for caregiver depression. Support for secondary modifying-effects hypotheses is found for satisfaction outcomes and care-related

strain outcomes. **Implications:** Care consultation delivered within a partnership between a managed care health system and an Alzheimer's Association is a promising strategy for improving selected outcomes for patients with dementia and their caregivers.

From its inception in the 1920s and 1930s, the philosophy of managed care has placed high value on health information and support services to prevent crisis episodes and excessive utilization, and to help patients cope emotionally with illness (Lasker & Committee on Medicine and Public Health, 1997). Although information and support are part of the managed care philosophy, economic pressures lead many provider organizations to eliminate these nonmedical services or ration them only to health plan members at highest risk (e.g., those with multiple chronic conditions, or frequent hospitalizations and emergency department visits).

As an alternative strategy for dealing with economic pressures, some managed care health systems are maintaining their information and support services by establishing partnerships with community agencies that specialize in the provision of these nonmedical services (HMO Workgroup on Care Management, 1999). Low administrative overhead, reliance on volunteers, and use of philanthropic dollars allow these agencies to provide information and support services at a lower cost than possible in large health systems (Lasker & Committee on Medicine and Public Health, 1997).

This investigation examines outcomes for patients and family caregivers of an experimental partnership between a managed care health system and a community agency that provides information and support services. This partnership was established between Kaiser Permanente of Ohio and the Cleveland Area Alzheimer's Association to improve the quality of information and support services for patients with dementia and their family members.

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Because dementia often goes undiagnosed in primary care, patients and family members often do not receive sufficient information and support (Callahan, Hendrie, & Tierney, 1995). Even when diagnosed, patients and family members often do not receive enough information about the disease, treatments, and community services, and feel abandoned by health care providers (Beisecker, Chrisman, & Wright, 1997; Chenoweth & Spencer, 1986; Connell & Gallant, 1996; Glosser, Wexler, & Balmelli, 1985; Haley, Clair, & Saulsberry, 1992). This lack of information interferes with the effectiveness of treatments for dementia and other coexisting health conditions (Menzin, Lang, Friedman, Neumann, & Cummings, 1999), and may lead to more costly hospital stays (Coughlin & Liu, 1989; Gottlieb, 1999; Lyketsos, Sheppard, & Rabins, 2000).

Because of uncertainty about their ability to recognize, diagnose, and identify appropriate treatments for dementia, physicians and other providers report difficulties giving information and support to patients and families (Boise, Camicioli, Morgan, Rose, & Congleton, 1999; Small et al., 1997; Torian, Davidson, Fulop, Sell, & Fillit, 1992). Some acknowledge being uncomfortable dealing with behavioral symptoms (Glosser et al., 1985) and are not knowledgeable about available community services from agencies such as the Alzheimer's Association (Boise et al., 1999; Rubin, Glasser, & Werckle, 1987).

Experimental Partnership as an Intervention

Partnerships between managed care health systems and Alzheimer's Associations can take a number of different forms (National Chronic Care Consortium/ National Alzheimer's Association, 1998). The partnership tested in this investigation adds care consultation from the Cleveland Area Alzheimer's Association to usual managed care services offered to members of Kaiser Permanente.

Care consultation is a flexible, multicomponent intervention that builds on more than 10 years of research on interventions for family caregivers (Biegel & Schulz, 1999; Bourgeois, Schulz, & Burgio, 1996; Kennet, Burgio, & Schulz, 2000). It is a telephone intervention based on an empowerment conceptual framework (Guttierrez, GlenMaye, & DeLois, 1995). This framework assumes that patients and families have the capacity to make their own decisions if given sufficient information and coaching. Care consultants work with families in a collegial fashion to help identify personal strengths, as well as resources within the family system, health plan, and community. The goal is to provide tools to enhance patients' and caregivers' competence and self-efficacy. Care consultants also provide information about available community services, facilitate decisions about how to best utilize

and apply for these services, and may contact service agencies on behalf of patients and caregivers.

Care consultants initiate the first contacts with patients and family caregivers. This strategy is intended to overcome delays in support and information service use or the use of these services only in times of crisis (Bass, McCarthy, Eckert, & Bichler, 1994; Costa et al., 1996). Care consultation is delivered by one of three Association staff members, two of whom are master's prepared licensed social workers.

Care consultants follow a standardized protocol for service delivery that includes conducting a structured initial assessment, identifying problems or challenges, and developing strategies for using personal, family, and community resources. Care consultants collaborate with patients and family caregivers to create an individualized plan of care. The care plan outlines specific tasks to be completed; assigns patients, family members, or Association staff/volunteers to work on these tasks; and gives a time frame for task completion and reassessment. Tasks often include using other Association services, such as education and training programs, support groups, a respite reimbursement program, and a nationwide program to return wanderers safely home. Regularly scheduled follow-ups monitor progress and add new tasks to the care plan as needed. Follow-ups are initially done biweekly, decreasing to 1-month and 3-month intervals unless needs dictate more frequent contacts. In difficult periods, daily contact with care consultants may be necessary. Alternatively, if care consultants, patients, and caregivers agree and there are no problems that have not been addressed or discussed, trained volunteers make follow-up contacts, with care consultants on call.

Although all persons in the intervention group are offered care consultation, there is variation in the extent to which patients and families accept services. On average, care consultants have 12 direct communication contacts with patients and caregivers per year. Control group patients and caregivers are able to contact the Association independently and use any of its services other than care consultation. Use of Association services other than care consultation by both the intervention and control groups is incorporated into the analysis. All Association services are free-of-charge.

Outcomes and Hypotheses

The effects of care consultation on three categories of outcomes are examined: (1) utilization outcomes, including patients' use of hospital, emergency department, and physicians; patients' use of community services; and patients' and caregivers' use of non-Association information and support services; (2) caregiver satisfaction with

managed care services, including satisfaction with types and quality of services provided; and information about memory problems; and (3) caregiver depression and care-related strain, including perceived health deterioration, role captivity, and relationship strain.

The primary study hypothesis is that the intervention group, compared with controls, will have lower utilization, increased satisfaction, and decreased depression and care-related strain over the 12-month study period. In addition to the primary hypothesis, four secondary modifying-effects hypotheses are tested. Modifying-effects hypotheses posit that the impact of care consultation will be intensified for intervention group patients and caregivers with certain characteristics (Biegel & Schulz, 1999; Bourgeois et al., 1996; Gitlin, Corcoran, Winter, Boyce, & Hauck, 2001). These secondary hypotheses are derived from the extensive body of research on family caregiving, which suggests why, for whom, and under what circumstances interventions may be expected to work (Hohmann, 1999).

The first modifying-effects hypothesis suggests care consultation will have greater benefits when it is used in combination with other Association services (i.e., support groups and education programs; Kosloski & Montgomery, 1995; Mittelman et al., 1993). In combination with care consultation, these other Association services form a service package that is expected to address more fully patient and caregiver needs.

The second modifying-effects hypothesis expects the benefits of care consultation to be greater when patients have only a diagnosis of memory problems rather than a specific dementia diagnosis (Mittelman, Ferris, Shulman, Steinberg, & Levin, 1996). Having a specific dementia diagnosis is one indicator that patients and caregivers have received an adequate assessment, which includes discussing symptoms, treatment options, and the likely course of the illness (Costa et al., 1996). Patients with memory problems, who have not received a specific dementia diagnosis, are less likely to have had a complete diagnostic assessment. This increases the chance that patients and caregivers have less complete information about symptoms, causes, treatments, and prognosis of memory problems. This heightened need for information is expected to increase the potential benefits of care consultation as an information resource.

The third modifying-effects hypothesis is that care consultation will lead to greater improvements in outcomes when caregivers consider patients' symptoms to be more severe. Perceived seriousness of symptoms has long been recognized as a key factor that motivates help-seeking and acceptance of interventions for health problems (Becker, 1974). Perceiving patients' memory symptoms as more serious at the start of the demonstration is expected

to increase the chances that the intervention group will accept assistance offered by care consultants and thus experience greater benefits (Bass, McClendon, Brennan, & McCarthy, 1998; Lin, 1986).

The fourth modifying-effects hypothesis is that care consultation is expected to offer greater benefits for nonspouse caregivers. Nonspouse caregivers, who are mainly adult children, compared with spouse caregivers, are more likely to accept assistance and services, such as care consultation (Auslander & Litwin, 1990; Pruchno, Michaels, & Potashnik, 1990). Resistance to service use by spouses stems from feelings that it is their sole duty to provide care, and that services will complicate caregiving (Collins, Stommel, King, & Given, 1991) or force a change in the care arrangement, such as nursing home placement (Bass, Noelker, & Rechlin, 1996; Cicirelli, 1983; Pruchno et al., 1990).

Methods

Design

Study data came from structured telephone interviews with primary family caregivers conducted at baseline (T1) and 1-year post-baseline (T2); and from medical and administrative record information abstracted from Kaiser and the Alzheimer's Association. Following the T1 interview, 60% of families were randomly assigned to the intervention group and 40% to the control group. More cases were assigned to the treatment group in anticipation of naturally occurring variation in the use of care consultation and other Association services. Following T1 interviews and random assignment, names and contact information for individuals in the treatment group were forwarded to the Association's care consultants who initiated the intervention within 5 days. Control group patients and caregivers received usual managed care services and could independently contact the Association for services other than care consultation. Physicians and managed care providers were not told which patients and caregivers agreed to participate or whether participants were in the treatment or control group.

Sample

The sample was drawn from Kaiser members whose medical records indicated they had either a specific diagnosis of dementia or a symptom code indicating memory loss. In addition, eligible patients had to be 55 years or older; reside outside of a nursing home at the start of the demonstration; and live in the Cleveland Area Alzheimer's Association's service area, which includes Cuyahoga County (including the city of Cleveland) and four adjacent counties.

Based on medical records, 525 patients met these eligibility criteria. As a first step in the consent

process, primary care physicians sent personalized letters to eligible patients. The letter asked for written permission to release contact information to the evaluation team at Benjamin Rose so that patients and caregivers could be informed about the study and asked to participate. The evaluation team was permitted to contact patients and caregivers to ask for study participation only after Kaiser obtained written permission.

Written permission was obtained for 233 (44.4%) of the 525 patients. Limited available data showed no significant difference between patients who did and did not give permission to be contacted in whether they had a specific dementia diagnosis versus only a diagnosis of memory problems. Those who gave permission were significantly younger by an average of 2 years (76.4 vs. 78.3 years), and were significantly more likely to be males (40% vs. 32% males).

Of the 233 cases that agreed to be contacted by the evaluation team, consent for participation by patients, caregivers, or both was obtained in 210 cases (90%). Consenting cases compared with refusals did not differ in terms of having a specific dementia diagnosis, patient age, or patient gender. In 182 of the 210 cases, a primary family caregiver completed an initial T1 interview. The 27 other participating cases only include interviews with patients because they did not have or need a family caregiver, or their family caregiver refused to participate.

Of the 182 caregivers who completed T1 interviews, 157 also completed T2 interviews 1 year later and are included in analyses of outcomes constructed from interview data. These outcomes include selected utilization measures, satisfaction with managed care services, and caregiver depression and strain. Fourteen of the 25 caregivers who did not complete T2 refused to continue in the study, 6 could not be reached, 3 died prior to the interview, and patients of two caregivers died after the T1 interview but prior to beginning the intervention. Analysis comparing the 157 caregivers who completed T1 and T2 and the 25 who completed only T1 found those who participated in both interviews were significantly more likely to be Kaiser members, to be spouses of patients, to report more care-related health deterioration at T1, and to be caring for patients who had a specific dementia diagnosis. No differences were found in T1 levels of satisfaction with managed care services, caregiver depression, relationship strain, or role captivity. The significant differences may indicate that caregivers included in this analysis are more connected to the Kaiser health plan and may be at greater risk of negative health consequences.

In addition to outcomes constructed from interview data, Kaiser medical record data are used to create health care utilization outcomes for number of hospitalizations, emergency department visits, and physician visits, and whether there was a Kaiser case management visit. Kaiser mandated that a separate

written consent be obtained to access utilization data. This separate consent was obtained for 120 patients whose caregivers completed T1 and T2 interviews. These 120 patients differed significantly from those who refused access to utilization data by being an average of 4 years younger, more likely to have caregivers who are Kaiser members, and more likely to have spouse caregivers. No differences were found in the likelihood of patients having a specific dementia diagnosis, caregiver satisfaction with the health plan, and caregiver depression and strain.

Measures

Intervention and Modifying Characteristics.—The intervention and control groups are compared by including in the analysis a dichotomous variable that assigns a value of 1 to the intervention group and a value of 0 to the control group. Support for the primary hypothesis, which posits overall differences between the intervention and control groups, is evident by a significant relationship between this dichotomous variable and the dependent outcome measures.

The modifying-effects hypotheses are tested using product terms created by multiplying the dichotomous intervention variable and each of the four modifying characteristics. Three of the modifying characteristics are dichotomous: Whether patients or caregivers use any Association services in addition to care consultation during the 1-year period, whether patients' medical records listed a specific dementia diagnosis versus only memory problems, and whether caregivers are patients' spouses. The fourth modifying characteristic is a five-item index of the severity of patients' memory difficulties as reported by caregivers during T1 interviews. The Appendix displays the individual items that comprise this measure and Cronbach's alpha reliability.

Utilization Outcomes.—Four utilization outcomes represent the use of Kaiser managed care services during the 1-year period. Three of these utilization outcomes are continuous: number of hospital admissions, number of emergency department visits, and number of physician visits. The fourth measure is dichotomous, indicating whether patients had any Kaiser case management visits during the 1-year period. A dichotomous rather than continuous measure is used for this service because of the 20% of patients who had any Kaiser case management visits; only 3% had more than one visit.

Two additional continuous utilization outcomes come from caregiver interview responses to questions about the use of nine types of community services. These services could have come from Kaiser or from some other community agency or hired helpers. Exploratory factor and reliability analyses indicated that the nine services form two indices representing the number of direct-care home and

community services used by patients and the number of non-Association information and support services used by patients or caregivers. (See the Appendix for a list of specific services in each index and Cronbach's alpha reliability.) Both indices exclude any services provided by the Association.

Caregiver Satisfaction With Health Plan Outcomes.—There are three multi-item indicators of satisfaction with Kaiser managed care services. Exploratory factor analyses of data from T1 and T2 interviews confirmed that these measures represent independent dimensions of satisfaction. The three measures include: a two-item index of satisfaction with the types of Kaiser services, an eight-item index of satisfaction with the quality of Kaiser services, and a five-item index of satisfaction with information received about the illness. Items, scoring, and Cronbach's alpha reliability for each index are displayed in the Appendix.

Caregiver Depression and Strain Outcomes.—This category of outcomes is represented by four multi-item indices that come from caregiver interviews. Exploratory factor and reliability analyses of T1 and T2 data confirmed that items making up these measures form four distinct outcomes (see Appendix for items and Cronbach's alpha reliability).

Caregiver depression, a measure of general well-being (Stull, Kosloski, & Kercher, 1994), reflects the frequency of 11 symptoms of depression during the week preceding the interviews. The depression measure comes from a managed care demonstration being conducted in five communities across the United States (Montgomery, 1998). Nine of the 11 items are identical to those in the short version of the Center for Epidemiologic Studies–Depression (CES-D) scale (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). Two items from the short CES-D, reflecting the interpersonal domain (i.e., “people dislike me” and “people were unfriendly to me”), are omitted. These interpersonal items were dropped because of concerns about the cultural variation in the meaning among Hispanic respondents. Two other items from the full CES-D are used as substitutes (i.e., “bothered by things that don't usually bother me” and “trouble keeping your mind on what you were doing”).

Caregiver strain is represented by three measures of the perceived negative effects specific to caregiving (see Appendix for items and Cronbach's alpha reliability). Four items are used to assess relationship strain between patients and caregivers. A measure of health deterioration is comprised of seven items that asked caregivers about any adverse health effects from caregiving (Bass, McClendon, Deimling, & Mukherjee, 1994; Bass et al., 1996). Role captivity is constructed from three items that reflect feelings of being trapped in the caregiving role (Pearlin, Mullan, Semple, & Skaff, 1990).

Controls.—A T1 version of each outcome measure is used as a covariate to control for preintervention levels, and ensure that multivariate analyses represent change in outcomes over the 1-year study period (Kessler & Greenberg, 1981). Two additional control factors are included. One is a dichotomous variable indicating if the patient died before completion of the 1-year study period. This variable is used when examining utilization outcomes in order to control for the more limited time period during which these patients could use services. The second control is a continuous variable representing the number of days between T1 and T2 interviews. Small variation in the projected number of days between interviews resulted from caregivers' availability in scheduling interviews.

Analytic Strategy

Ordinary least-squares regression is used for examining continuous outcomes and logistic regression for the dichotomous outcome. The modifying-effects hypotheses are tested by including four product terms created by multiplying the intervention variable by each modifying characteristic (Cleary & Kessler, 1982; Southwood, 1978). Only significant product terms are retained in the final equations. When product terms are significant, additional equations are estimated to describe the modifying effects further.

Findings

Descriptive Results

Table 1 displays means, standard deviations, and scoring for T2 outcomes. Means show the average number of emergency department visits was .61 (33% had at least one visit), the average number of hospital admissions was .21 (18% had at least one hospital admission), and 20% had a case management visit. There was an average of 5.18 physician visits, 1.44 different direct care community services used, and 1.32 different non-Association information and support services used. T2 caregiver satisfaction outcomes have means slightly above the midpoint of their 4-point scale (“strongly disagree” = 0; “strongly agree” = 3). The average frequency that caregivers experience symptoms of depression is midway between the “never” and “sometimes” response categories (mean = .66). For T2 strain outcomes, mean ratings are between “agree” and “disagree” on the 4-point scale, although closer to “disagree,” suggesting lower levels of strain (means = 1.15, 1.27, and 1.17, respectively).

Table 2 presents means, standard deviations, and scoring for all independent variables, including the variable distinguishing the intervention and control groups, modifying characteristics, and T1 controls.

Table 1. Means, Standard Deviations, and Scoring for T2 Outcomes

T2 Outcomes and Scoring	Total Sample		Intervention Group		Control Group	
	Mean	SD	Mean	SD	Mean	SD
Utilization						
Emergency department visits (0–5)	.61	1.07	.51	.98	.68	1.12
Hospital admissions (0–4)	.21	.58	.18	.56	.26	.59
Physician visits (0–27)	5.18	4.23	5.19	4.00	5.18	4.49
Case management visit (1 = yes)	.20	.40	.13	.34	.29	.46
Direct care community services (0–4)	1.44	1.48	1.50	1.48	1.48	1.56
Non-Association information and support services (0–4)	1.32	1.24	1.24	1.24	1.34	1.28
Caregiver Satisfaction With Health Plan						
Satisfaction with types of services (0 = strongly disagree to 3 = strongly agree)	1.66	.62	1.66	.59	1.65	.67
Satisfaction with quality of services (0 = strongly disagree to 3 = strongly agree)	1.74	.46	1.77	.43	1.68	.49
Satisfaction with information (0 = strongly disagree to 3 = strongly agree)	1.80	.58	1.84	.57	1.74	.60
Caregiver Depression and Strain						
Depression (0 = hardly ever/never, 1 = sometimes, 2 = often)	.66	.43	.60	.39	.76	.47
Relationship strain (0 = strongly disagree to 3 = strongly agree)	1.15	.59	1.10	.54	1.22	.64
Health deterioration (0 = strongly disagree to 3 = strongly agree)	1.27	.58	1.24	.52	1.33	.65
Role captivity (0 = strongly disagree to 3 = strongly agree)	1.17	.72	1.16	.71	1.18	.74

Multivariate Comparison of Intervention and Control Groups

Tables 3 through 5 give results of regression analyses that test for differences in outcomes between the intervention and control groups. The first row in each regression table displays the effect of the intervention variable and the last rows include any significant product terms.

T2 Utilization Outcomes.—Table 3 presents results for utilization outcomes. Equations in Table 3 for number of emergency department visits, number of hospital admissions, and number of physician visits show no significant intervention effects. Two of the regression equations show significant main effects, with the intervention group less likely to have a Kaiser case management visit ($b = -1.70$), and using fewer direct care community services ($b = -.09$). The equation for the number of non-Association information and support services has a significant product term ($b = -.22$). This shows the intervention group uses fewer non-Association information and support services when patients have more severe memory difficulties. To clarify this statistical interaction further, two separate regression equations not displayed in the tables are estimated: one for patients with memory difficulties that are more severe than average, and one for patients with average and less than average severity of memory difficulties at the start of the demonstration. The

effect of the intervention variable for the more impaired subsample is significant ($b = -.17$; $p \leq .01$), whereas the effect of the intervention variable for the less impaired is not significant ($b = .002$; $p = .99$).

T2 Caregiver Satisfaction Outcomes.—In Table 4, regression equations for the three measures of satisfaction with the health plan show that the intervention variable has significant main and interaction effects with the dementia diagnosis variable. Because of the significant interactions, significant main effects are interpreted as the impact of the intervention for patients who do not have a specific dementia diagnosis ($b = .35$, $.31$, and $.40$, respectively). These effects indicate increased caregiver satisfaction with quality of health plan services, types of health plan services, and information received about the illness when patients have not received a specific dementia diagnosis. The main and interaction effects together imply there is a significantly smaller relationship between the intervention and these outcomes for patients who have a specific dementia diagnosis [e.g., estimated slope for quality of health plan services ($b = -.46 + .35 = -.11$)].

To confirm these modifying effects further, separate equations are estimated for those who have a specific dementia diagnosis and for those with only symptoms of memory problems. When patients do not have a diagnosis, coefficients for the intervention variable are sizeable and significant for each of the three satisfaction measures ($b = .48$, $.35$, and $.53$,

Table 2. Means, Standard Deviations, and Scoring for T1 Outcomes, Modifying Characteristics, and Controls

Independent Variable and Scoring	Total Sample		Intervention Group		Control Group	
	Mean	SD	Mean	SD	Mean	SD
Intervention (1 = intervention group)	.60	.49	—	—	—	—
T1 Utilization						
Emergency department visits (0–6)	.43	.96	.43	1.04	.43	.91
Hospital admissions (0–1)	.21	.58	.18	.56	.26	.59
Physician visits (0–19)	2.94	2.72	2.94	2.84	2.94	2.58
Case management visit (1 = yes)	.10	.30	.10	.30	.10	.30
Direct care community services (0–4)	.68	1.16	.80	1.24	.52	1.00
Non-Association information and support services (0–4)	.72	.88	.76	.96	.68	.84
T1 Caregiver Satisfaction						
Satisfaction with types of services (0 = strongly disagree to 3 = strongly agree)	1.59	.60	1.59	.63	1.60	.54
Satisfaction with quality of services (0 = strongly disagree to 3 = strongly agree)	1.74	.43	1.76	.44	1.71	.41
Satisfaction with information (0 = strongly disagree to 3 = strongly agree)	1.60	.63	1.58	.62		
T1 Caregiver Depression and Strain						
Depression (0 = hardly ever/never; 1 = sometimes; 2 = often)	.59	.42	.57	.40	.62	.45
Relationship strain (0 = strongly disagree to 3 = strongly agree)	1.33	.52	1.26	.50	1.45	.55
Health deterioration (0 = strongly disagree to 3 = strongly agree)	1.34	.49	1.31	.47	1.40	.52
Role captivity (0 = strongly disagree to 3 = strongly agree)	1.26	.62	1.24	.61	1.28	.64
Modifying Characteristics						
Other Association service use (1 = yes)	.58	.50	.69	.46	.39	.49
Dementia diagnosis (1 = yes)	.59	.49	.60	.49	.59	.50
Memory difficulties (0 = no difficulty to 2 = a great deal of difficulty)	1.21	.57	1.25	.53	1.16	.63
Spouse caregiver (1 = yes)	.55	.50	.47	.50	.68	.47
Controls						
Patient deceased between T1 and T2 (1 = yes)	.11	.31	.07	.26	.16	.37
Days between T1 and T2 (174–610)	373.80	48.76	371.86	61.00	377.72	55.22

respectively), whereas the intervention variable has small, nonsignificant coefficients in the subsample with a dementia diagnosis ($b = -.09$, $-.08$, and $-.18$, respectively).

The product term for the intervention variable and perceived memory difficulties also is significant for satisfaction with the types of Kaiser services ($b = .34$), with significant increases in satisfaction in the intervention group when patients have more severe memory difficulties. This is illustrated by estimating one equation for patients with above average severity of memory difficulties, and another equation for patients with average or below average severity. When severity is below average, the intervention's effect is not significant ($b = .06$; $p = .74$), whereas there is a significant intervention effect among the more severely impaired ($b = .48$; $p = .05$).

T2 Caregiver Depression and Strain Outcomes.—The first equation in Table 5 is for depression and shows a significant main effect of

the intervention ($b = -.12$). Caregivers in the intervention group have greater decreases in reported symptoms of depression over the 1-year study period.

In the equation for relationship strain, there is a significant main effect of the intervention ($b = -.32$) and a significant product term ($b = .38$). The main effect indicates that, for nonspouse caregivers, the intervention leads to decreases in relationship strain. The main effect and product term together suggest the intervention has no effect on relationship strain for spouse caregivers [e.g., estimated slope for spouses is $.06$ ($b = -.32 + .38$)]. Separate equations for spouses and nonspouses confirm this pattern, with the intervention variable significant for nonspouses ($b = -.33$; $p = .02$) and not significant for spouses ($b = .06$; $p = .56$).

The last two equations in Table 5 have significant product terms for the interaction of the intervention and other Association service use ($b = -.33$ and $-.51$, respectively). These effects indicate the in-

Table 3. Regression Coefficients for the Relationship of the Intervention and Modifying Factors With Utilization Outcomes

Factor	Emergency Department Hospital Admissions ^a (<i>n</i> = 120)			Case Management Visit (<i>n</i> = 120)			Physician Visits (<i>n</i> = 120)			Direct Care Community Services (<i>n</i> = 155)			Non-Association Information/ Support Services (<i>n</i> = 154)		
	<i>B</i>	β	<i>B</i>	β	<i>B</i>	Odds Ratio	<i>B</i>	β	<i>B</i>	β	<i>B</i>	β	<i>B</i>	β	<i>B</i>
Intervention group	-.13	-.06	-.02	-.02	-1.70***	.18	.51	.06	-.09*	-.12	-.11**	-.17			
Modifying Factors															
Other Association service use	-.10	-.05	-.30***	-.26	2.16***	8.63	-.85	-.10	.11**	.15	.08	.12			
Dementia diagnosis	.17	.08	.09	.07	-.59	.55	-1.33*	-.16	.09	.12	.08	.13			
Memory difficulties	.07	.03	-.02	-.02	1.06	2.88	-.04	.00	.09	.12	.17**	.28			
Spouse caregiver	-.13	-.06	-.16	-.14	1.50**	4.49	1.59**	.18	-.12**	-.17	-.09*	-.14			
Controls															
Time 1 dependent measure	.22**	.20	-.05	-.02	.12	1.13	.46***	.30	.46***	.36	.37***	.27			
Patient deceased between T1 and T2	.01	.00	-.05	-.02	-.73	.48	-2.75**	-.20	.30***	.25					
Days between T1 and T2	.03	.13	-.00	-.31	.01	1.01	.03***	.35	-.00	-.03	-.00	-.11			
Product Term															
Intervention \times Memory difficulties															
Total <i>R</i> ²	.07	.07		.07		.21***	.30***	.30***	.37***		-.22**	.21***			

^aAnalyses also were conducted using dichotomous measures that group patients into those who had any emergency department visits or any hospital admissions, as well as a continuous measure for the number of hospital days. Results for these alternative measures yielded similar results to those displayed.

* $p < .10$; ** $p \leq .05$; *** $p \leq .01$.

intervention significantly reduces health deterioration and role captivity when patients and/or caregivers use other Association services. A separate equation for the subsample that uses other Association services confirms that the intervention significantly reduces caregivers' feelings of health deterioration ($b = -.27$; $p = .03$) and role captivity ($b = -.38$; $p = .02$). The intervention variable has a small, nonsignificant effect on health deterioration ($b = .12$; $p = .36$) and role captivity ($b = .14$; $p = .35$) among those who do not use other Association services.

Discussion

This demonstration examines outcomes of a partnership between a managed care system and a community agency that provides information and support services. The intervention added Alzheimer's Association care consultation service as a supplement to managed care services. The primary hypothesis posits that the use of the care consultation intervention would lead to lower utilization of managed care and other services, caregivers who are more satisfied with managed care services, and caregivers who are less depressed and strained. Secondary modifying-effects hypotheses predict that the effects of the intervention on outcomes would be intensified when care consultation is used in combination with other Association services, patients have not received a specific dementia diagnosis, patients' memory difficulties are more severe, and caregivers are not spouses of patients.

Utilization Outcomes

Three of the six service utilization outcomes are used significantly less often by the intervention group. For Kaiser case management and direct care community services, findings correspond to the primary hypothesis, with lower utilization in the intervention group as a whole. For non-Association information and support services, the difference between the intervention and control groups is consistent with the modifying-effects hypothesis. For patients with more severe memory difficulties, the intervention group has lower utilization than the control group.

The three services that are used less frequently by the intervention group provide many of the same types of assistance as care consultation, particularly in the areas of health information, health education, care planning and coordination, and emotional support. Lower utilization may occur because care consultation functions as an effective substitute for these services. Compared with many other services, particularly Kaiser case management, care consultation has advantages of specializing in needs of people

Table 4. Regression Coefficients for the Relationship of the Intervention and Modifying Factors With Satisfaction Outcomes

Factor	Satisfaction With Types of Services (<i>n</i> = 154)		Satisfaction With Quality of Services (<i>n</i> = 154)		Satisfaction With Information (<i>n</i> = 153)	
	<i>B</i>	β	<i>B</i>	β	<i>B</i>	β
Intervention	.35**	.27	.31***	.34	.40***	.33
Modifying factors						
Other Association service use	-.17*	-.13	-.08	-.08	-.03	-.02
Dementia diagnosis	.32**	.25	.18*	.19	.33**	.28
Memory difficulties	-.47***	-.39	-.14**	-.16	-.12	-.10
Spouse caregiver	.03	.03	.03	.03	-.15*	-.13
Controls						
Time 1-dependent measure	.36***	.35	.59***	.55	.51***	.55
Days between T1 and T2	.00	.02	.00	.06	.00	-.07
Product terms						
Intervention \times Dementia diagnosis	-.46**	-.35	-.36***	-.38	-.51***	-.42
Intervention \times Memory difficulties	.34*	.21				
Total <i>R</i> ²	.28***		.44***		.37***	

p* < .09; *p* ≤ .05; ****p* ≤ .01.

with memory problems and the ability to provide care over an extended period of time.

Findings for traditional medical services, including emergency department visits, hospital admissions, and physician visits, do not show any significant intervention-control group differences. The lack of differences may indicate that care consultation is not sufficient to reduce potentially preventable emergency department visits, hospitalizations, and physician visits. Alternatively, there may be only a small number of potentially preventable utilization episodes for these services during a short 1-year time period, which may limit the ability to detect any impact of the intervention. Another explanation for the lack of differences may be that utilization of these medical services is more closely linked to other comorbid conditions rather than dementia or memory problems. It may be unrealistic to expect care consultation to impact service use not mainly caused by dementia or memory problems.

Satisfaction Outcomes

For each dimension of satisfaction (i.e., satisfaction with quality of services, types of services, and information about the illness), caregivers in the intervention group whose patients had not received a specific dementia diagnosis before the start of the demonstration have increased satisfaction with managed care services. These findings support the modifying-effects hypothesis. Patients who had not received a specific dementia diagnosis before the demonstration have a greater need for information about symptoms, course of treatment, and care (Costa et al., 1996). Although they do not diagnose dementia, care consultants provide a wealth of information

about memory symptoms, causes, treatments, and strategies for managing symptoms. Care consultants also guide patients and families to use managed care services effectively. Increased satisfaction with managed care may result because patients and family members in the intervention group become more knowledgeable consumers and are empowered to use the health plan more effectively. Increased satisfaction also may reflect favorable opinions about care consultation, which from consumers' points of view is an added part of managed care services.

An additional significant effect among the satisfaction outcomes also supports the modifying-effects hypothesis: Intervention group caregivers who indicate their patients have more severe memory symptoms are more satisfied with the types of managed care services offered by the health plan. Caregivers of patients with severe symptoms are more likely to have sought assistance for memory problems from the health plan before the demonstration. These prior experiences may increase caregivers' awareness of how the partnership with the Association has improved available services for people with memory problems and enabled the managed care system to expand its service options.

Caregiver Depression and Strain

Caregiver depression is an indicator of general well-being not specifically linked to caregiving. Results for this outcome support the primary hypothesis, with intervention group caregivers showing a significant decrease in depression compared with the control group. Care consultation may decrease depression by attending to the needs of caregivers, which contrasts to the typical health care emphasis solely or primarily on patient needs. Care

Table 5. Regression Coefficients for the Relationship of the Intervention and Modifying Factors With Caregiver Depression and Strain Outcomes

Factor	Depression (<i>n</i> = 156)		Relationship Strain (<i>n</i> = 155)		Health Deterioration (<i>n</i> = 155)		Role Captivity (<i>n</i> = 139)	
	<i>B</i>	β	<i>B</i>	β	<i>B</i>	β	<i>B</i>	β
Intervention	-.12**	-.14	-.32**	-.27	.09	.08	.14	.09
Modifying factors								
Other Association service use	.06	.07	.24***	.20	.38***	.32	.58***	.40
Dementia diagnosis	.08	.09	.15*	-.05	-.04	-.04	.04	.03
Memory difficulties	.04	.04	-.05	.13	.09	.08	.08	.06
Spouse caregiver	.09	.11	-.25*	-.21	.07	.06	-.08	-.05
Controls								
Time 1-dependent measure	.55***	.53	.56***	.50	.57***	.48	.65***	.57
Days between T1 and T2	.00	-.09	-.00*	-.12	.00	-.06	.00	-.04
Product terms								
Intervention \times Spouse caregiver			.38**	.30				
Intervention \times Other Association service use					-.33*	-.28	-.51**	-.35
Total <i>R</i> ²	.39***		.36***		.30***		.45***	

p* < .09; *p* ≤ .05; ****p* ≤ .01.

consultants also work to increase the size and effectiveness of caregivers' informal support networks, thus reducing social isolation that may cause or exacerbate depression. Additionally, this assistance may enable caregivers to give higher quality care to their patients, which may help avoid crisis episodes that are emotionally distressing.

Caregiver strain outcomes are specifically linked to perceptions of negative caregiving consequences. Findings for caregiver strain support modifying-effects hypotheses, with intervention group non-spouse caregivers having reduced strain in the relationship with patients, and caregivers who use other Association services in combination with care consultation having reduced health deterioration and role captivity.

The intervention's ability to reduce relationship strain among nonspouse caregivers may reflect caregiver receptiveness to outside assistance from service providers, such as care consultants. Non-spouse caregivers, compared with spouses, are more open to and accepting of services to address care-related problems (Collins et al., 1991; Noelker & Bass, 1995). Receptivity to services may allow care consultants to facilitate a more positive relationship between patients and caregivers by providing information about the impact of memory problems on patients' moods and behaviors, distinguishing symptoms of illness from intentional negative behaviors, offering strategies for dealing with difficult symptoms, and suggesting ways of fostering positive interactions despite the memory problems. Less impact of care consultation on relationship strain for spouse caregivers also may reflect greater stability in long-standing patterns of interaction within a marriage and may limit possible changes

caused by a caregiving intervention (Auslander & Litwin, 1990; Pruchno et al., 1990).

The ability of the intervention to reduce health deterioration and role captivity when other Association services are used in conjunction with care consultation may result because these services reinforce and complement suggestions and recommendations given by care consultants. Other Association services are based on a similar philosophy as care consultation, which promotes consumer empowerment. Care consultants and staff/volunteers who provide other Association services share a common orientation about how to best assist caregivers. Additionally, the care plan developed through the collaboration of care consultants and families is used by other Association services as a blueprint for guiding interactions with caregivers and focusing on common service goals and objectives. Care consultants and other Association staff and volunteers also may jointly discuss cases and establish unified and consistent strategies for working with families.

Results of this demonstration suggest that care consultation delivered within a partnership between a managed care system and Alzheimer's Association may be a promising strategy for improving care for dementia patients and their caregivers. The beneficial impact of the intervention is evident in reduced use of selected managed care and community services, increased satisfaction with managed care services, and decreased caregiver depression and care-related strain. Some beneficial effects apply to the intervention group as whole, whereas others are evident only when modifying characteristics are incorporated into the analysis. Only a small number of prior intervention studies have explicitly tested for modifying effects (Hohmann, 1999). In this investi-

gation, several beneficial effects of the intervention would have been overlooked had the analysis only tested for evidence of the primary hypothesis.

The demonstration has a number of features that limit generalizability of findings and highlight the necessity of broader replication studies. For example, the sample does not represent all caregiving situations, even within the context of managed health care. Although this sample of caregivers is larger than 85% of recent intervention research (Bourgeois et al., 1996; Kennet et al., 2000), it may underrepresent the largest segment of patients whose memory symptoms go unnoticed and undiagnosed in health systems (Callahan et al., 1995). Examples include caregiving situations in which symptoms are mild, and there is little or no contact with providers, or when patients have fewer comorbid conditions that could be complicated by dementia. Despite these limitations, the sample has some advantages over prior studies by including the selection of patients from primary care rather than specialty care clinics, and not being restricted to patients and caregivers already using services targeted to persons with Alzheimer's disease or dementia.

Generalizability may be limited also because the study was conducted in only one staff-based managed care system. It is unknown whether this type of partnership can be established and yield similar benefits in other types of managed care environments or whether this type of partnership can benefit Medicare patients not enrolled in managed care. Further study is needed to assess whether the nearly 200 other Alzheimer's Association chapters in the United States can provide care consultation as part of a partnership within a managed care system. The Cleveland Area Alzheimer's Association is one of the largest chapters and has extensive experience with local and national demonstration projects. It is not clear whether smaller and/or less experienced Associations could maintain a partnership with large health systems.

Several other issues not addressed in this analysis would further clarify the impact of care consultation. First, more detailed information on the types of assistance provided by care consultants, as well as the amount and timing of that assistance, would help identify the exact causes of improvements in outcomes. Second, psychosocial outcomes for patients, such as depression and satisfaction with services, were not examined, although they will be considered in future analyses. Third, the demonstration would have been strengthened by having more detailed medical information about changes in patients' memory difficulties over the course of the intervention. Although caregivers report on patients' illness during interviews, after the initial recruitment period, clinical data from providers were not available. Fourth, this study did not examine the impact of care consultation on physicians and other providers, including whether the intervention altered

interactions between patients, caregivers, and health care providers.

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Appendix

Individual Items Comprising Measures and Reliability (n = 157)

Item	Cronbach's α	
	T1	T2
Direct Care Community Services	.80	.84
Personal care service (e.g., bathing, dressing)		
Chore service (e.g., shopping, house cleaning)		
Home health service (e.g., caring for incisions, monitoring blood pressure)		
Nursing home care		
Respite service (someone staying with relative, adult day care)		
Non-Association Information and Support Services	.58	.58
Finding and arranging for services		
Legal assistance related to the relative's illness		
Health information about the relative's illness		
Emotional support or counseling		
Satisfaction With Types of Services	.78	.79
The types of help needed by my relative are available		
The types of help I need are available		
Satisfaction With Quality of Services	.89	.89
My relative gets excellent care		
Care for my relative is done in a rushed way ^a		
My relative and I get good information		
Help for my relative is given in a caring way		
Help for my relative is provided in a knowledgeable way		
There is a real understanding of what it is like for me to deal with my relative's health problems		
I do not get enough support for taking care of my relative ^a		
When decisions about care for my relative need to be made, we get helpful suggestions		

(Appendix continues on next page)

Appendix (Continued)

Item	Cronbach's α	
	T1	T2
Satisfaction With Information	.63	.63
If I have questions, I know where I can get answers about my relative's memory or behavior problems		
My relative's doctor has helped me understand my relative's memory or behavior problems		
I think my relative's doctor understands the cause of my relative's memory or behavior problems		
I have enough information about medications for memory or behavior problems		
I understand the causes of my relative's memory or behavior problems		
Depression	.83	.83
Bothered by things that don't usually bother me		
Not feel like eating or had a poor appetite		
Have trouble keeping mind on what doing		
Feel depressed		
Feel like everything was an effort		
Sleep restlessly		
Feel happy ^a		
Feel lonely		
Enjoy life ^a		
Feel sad		
Not seem to be able to get going		
Relationship Strain	.74	.76
I felt that my relationship with him/her was strained		
I felt sad about my relationship with him/her		
I felt angry toward him/her		
I felt appreciated for what I did ^a		
Health Deterioration	.90	.90
I seemed to get sick more often		
I felt my physical health was worse than before		
I was more often downhearted, blue, or sad		
I was more nervous or bothered by nerves than before		
I had less pep or energy		
I felt irritable more often		
I was bothered more by aches and pains		
Role Captivity	.80	.84
I wished I were free to lead my own life		
I felt trapped having to care for my relative		
I wished I could just run away from this situation		
Memory Difficulties	.76	.76
Remembering recent events		
Knowing what day of the week it is		
Remembering his/her address		
Remembering the right words to use		
Finding his/her way around the house		

^aScoring on these items is reversed.