

American Journal of Hospice and Palliative Medicine

<http://ajh.sagepub.com/>

Cost Analysis of a Novel Interdisciplinary Model for Advanced Illness Management

Faith P. Hopp, Eileen Trzcinski, Roxanne Roth, Dorothy Deremo, Evan Fonger, Sokchay Chiv and Michael Paletta

AM J HOSP PALLIAT CARE published online 21 February 2014

DOI: 10.1177/1049909114523827

The online version of this article can be found at:

<http://ajh.sagepub.com/content/early/2014/02/20/1049909114523827>

Published by:



<http://www.sagepublications.com>

Additional services and information for *American Journal of Hospice and Palliative Medicine* can be found at:

Email Alerts: <http://ajh.sagepub.com/cgi/alerts>

Subscriptions: <http://ajh.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

>> OnlineFirst Version of Record - Feb 21, 2014

What is This?

Cost Analysis of a Novel Interdisciplinary Model for Advanced Illness Management

Faith P. Hopp, MSW, PhD¹, Eileen Trzcinski, MSW, PhD¹,
Roxanne Roth, RN, MSN², Dorothy Deremo, RN, MSN, MHSA,
FACHE², Evan Fonger, MD², Sokchay Chiv, MPH²,
and Michael Paletta, MD, FAAHPM²

American Journal of Hospice
& Palliative Medicine[®]
1-7

© The Author(s) 2014

Reprints and permission:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/1049909114523827

ajhpm.sagepub.com



Abstract

Purpose: This research project evaluated cost outcomes for patients in the @HOME Support program, a novel interdisciplinary home-based program for patients and caregivers facing advanced illness drawing on the Chronic Care Model. **Methods:** Cost analysis involved paired sample *t*-tests to examine pre-post differences in health care expenditures obtained from Health Maintenance Organization (HMO) claims data for program participants. **Results:** Average 6-month costs per month significantly declined for patients older than 65 years of age from 1 HMO (US\$9300-US\$5900, $P = .001$). Evaluation of the second HMO showed that patients less than 65 years of age with lower preentry costs (<70 000) had a nonsignificant decline in total costs (US\$18 787-US\$13 781, $P = .08$). **Conclusions:** Study findings suggest @HOME Support is associated with reductions in the use and cost for most health services over time.

Keywords

hospice, palliative care, chronic care, advanced illness management, caregiver, cost analysis

Introduction

It is critically important for health care providers and policy makers to address the needs of the growing number of persons with advanced incurable illness and their caregivers. Chronic disease accounts for 75% of all health care spending and studies suggest that 5% of all patients consume 50% of the costs.¹ Patients with advanced chronic illness only comprise a 10% cohort of all those with chronic disease yet account for 64% of the total health care spending on chronic illness.²

Besides the cost burden, there is untold suffering of this seriously ill population and their caregivers because current Medicare financial and reimbursement structures require patients and families to choose between aggressive, life-sustaining treatment and comfort-oriented hospice care.³ Relatively few patients with chronic disease with diagnoses such as heart failure and chronic obstructive pulmonary disease are referred for hospice services.⁴⁻⁷ Hospice is offered to those who have 6 months or less to live as determined by a physician. Furthermore, election of hospice is often viewed by physicians, patients, and families as giving up. The majority desire to try 1 more treatment despite the likelihood of limited success and often refuse hospice care if referred.⁸ The outcome of this brink of death care contributes to myriad suffering and escalating, unsustainable health care costs.

Although a variety of care models have been proposed for advanced illness, results to date have been inconclusive.

A randomized study of the Advance Illness Coordinated Care program in the Veterans Health Administration for persons with advanced cancer, congestive heart failure, and chronic obstructive pulmonary disease found no significant differences in costs between program participation and controls.⁹ However, a home-based palliative care intervention, compared to conventional care, garnered both increased satisfaction and decreased costs.¹⁰ Patients receiving a palliative care, flexible benefits model increased their use of palliative services and had fewer acute care hospital days when compared to traditional hospice care.¹¹ To demonstrate the value of providing expanded choices for the millions of patients having serious chronic illness and relief to their burdened caregivers, additional studies are needed on usage patterns and costs associated with flexible advanced illness programs that do not require hospice election, limited life expectancy, or limitations on the use of curative treatments.

¹ School of Social Work, Wayne State University, Detroit, MI, USA

² Maggie Allesee Center for Innovation, Hospice of Michigan, Detroit, MI, USA

Corresponding Author:

Faith P. Hopp, MSW, PhD, School of Social Work, Thompson Home, Wayne State University, 4756 Cass Avenue, Detroit, MI 48202, USA.

Email: bb2938@wayne.edu

The @HOME Support program evolved from a pilot project based on the evaluation of a palliative care program for persons with advanced cancer. This palliative care program combined traditional hospice services with oncology care. A randomized trial evaluating program outcome was conducted for program participants compared with a group randomized to usual oncology care. Although no significant difference was noted in symptom control, there was a significant reduction in the decrease in quality of life (QOL) in the intervention arm.¹² Caregivers in the intervention group experienced a decrease in caregiver burden, measured by the Caregiver Burden Index at 1 month and 2 months following patient enrollment.¹³ A small group of participants (n = 55) had complete data available for a comparative cost analysis of resource utilization and total cost of care between the palliative care program and the usual care oncology group. Findings indicated that intervention patients demonstrated substantial cost savings (US\$2540 per case in 2002) primarily from decreased emergency department visits, hospitalizations, and shorter hospital stays.¹²

The findings from the pilot oncology study described previously provided the framework and design of @HOME Support. @HOME Support was implemented in 2007 in collaboration with 2 large Health Maintenance Organizations (HMOs). Both HMOs identified a shared interest in improving access to supportive care while reducing costs for patients in the last year of life. One partnering HMO chose to target a younger population primarily with advanced stage cancer, while the other focused more broadly on both cancer and noncancer diagnoses, with the majority of patients older than 65 years of age. Many aspects of the program were measured, including types of services, costs associated with delivering the services, and frequencies of health care usage.

The @HOME Support intervention is informed by the Chronic Care Model,^{14,15} which suggests that functional and clinical outcomes for persons with chronic illness can be improved through productive interactions between patients and their health care teams. This improvement can occur through innovations in the organization of health care, as well as through advances in the larger social environment, including greater access to community resources and the development of health care practices and policies that encourage effective chronic disease management. The key components of this model are described subsequently.

Interdisciplinary Collaborations

Given the Chronic Care Model emphasis on organizing the care system to meet chronic care needs, the @HOME Support program promotes sustained and ongoing collaboration among members of an interdisciplinary team. Interdisciplinary teams have demonstrated their value in many fields, including primary care, hospice, and palliative care, as well as in patient medical home models.¹⁶⁻¹⁹ The interdisciplinary team consists of nurses, counselors, personal care assistants, and volunteers. These groups develop collaborative treatment plans that focus on pain and symptom management, disease process education,

and goals-of-care discussions to support shared decision making. They also stress medication education and reconciliation, community referrals, health system navigation, and coordination among medical specialists.

Chronic Disease Management

The @HOME Support program provides services to help chronically ill persons to better manage their diseases. Currently, services are determined by the patient's ability to carry out activities of daily living (ADLs), particularly when those services allow patients to remain independent and safe in their homes. Although the caregiver model emphasizes assistance in meeting ADLs needs of patient, it also includes screening for instrumental ADLs (IADLs) and developing specific interventions to address these needs. Health care practitioners use this model to collaborate with primary and specialty physicians to provide comprehensive and coordinated services.

Decision-Making Support

The @HOME Support program focuses on promoting a partnership between patients and caregivers and health care providers associated with the program work to ensure that both patient and caregiver perspectives are considered. Determining patient preferences and facilitating treatment decisions require cooperation among all key players. Program staff support and advocate for those patients who make health care decisions on the basis of personal values and priorities that may or may not be in alignment with their family members. @HOME Support program health care providers work to promote and facilitate completion of Durable Power of Attorney for Health Care documents when appropriate since research has shown that patients who have appointed a durable power of attorney for health care are less likely to die in a hospital or receive unwanted care.²⁰ Since studies suggest that health care surrogates sometimes make decisions in crisis situations based on their own values and preferences instead of the patient's medical condition or expressed wishes, @HOME Support program staff work to ensure that caregivers fully understand the surrogate roles and responsibilities.^{21,22}

Caregiver Support

Consistent with the emphasis of the Chronic Care Model on providing support for the social environment, and recognizing the key role that caregivers play in this environment, caregiver support is a key component of the intervention. Caregiver support and training is based on motivational interviewing-based health coaching that has found to be an effective chronic care management intervention that focuses on supporting the role of caregiving.²³

Following this model, @HOME Support program staff coach caregivers to engage in effective communication and advocacy when working with health care providers and payers. Caregivers are also trained to promote safety in the home,

medication, and disease management and receive assistance with managing ADLs and IADLs.

Individualized Care

The @HOME Support program provides patient-centered and individualized services as key components of effective and ethical care for persons with chronic conditions.²⁴ The duration of service provision depends on the patient's condition, identified needs, and trajectory of decline. Patients have the opportunity to discontinue services at any time. Although they are referred to hospice care when appropriate, patients and families who decide not to access these services may still receive palliative and comfort care from the @HOME Support staff who are trained in these types of end-of-life care.

Methods

Study Setting

In 2010, the Maggie Allesee Center MAC of Hospice of Michigan, in collaboration with Wayne State University, secured a grant to rigorously measure cost outcomes. This study sought to provide critical information on the use and cost of services associated with a comprehensive advanced illness management program. The study was conducted in the Detroit metropolitan area. Case managers affiliated with 2 Detroit area health maintenance organizations (identified as plan A and plan B) as well as individual primary care providers, referred patients to the program. Services of the @HOME Support Program were delivered by health care clinicians (physicians, nurses, social workers, and aides) affiliated with Hospice of Michigan, a large provider of hospice and advanced illness services in Michigan.

Study Design

The study design involves a retrospective analysis of data obtained from service records and from partnering HMOs. Data on demographic characteristics and services were collected from service records at Hospice of Michigan. Data on the use of inpatient, outpatient, home care, and emergency department services were obtained from HMOs where the patients were enrolled. Prior to data collection, we obtained data sharing agreements and administrative approvals from each partnering HMO. Study protocols were also approved through Wayne State University institutional review board and corresponding HMO internal research review boards. In order to protect confidentiality, partnering HMOs were provided a crosswalk file that listed names of @HOME Support participants and a corresponding code number. The participating HMOs returned a deidentified data file that included health service use and cost variables for each patient. The crosswalk file was used to merge the data received from the HMO with @HOME Support electronic medical record data containing @HOME Support demographics and service use data. This deidentified data file was used for the analysis using SPSS version 19.1 software (IBM SPSS Statistics for Windows, Version 19.1. IBM Corp.).

Sample

The sample for this study included 148 patients receiving services from the @HOME Support program between January 2007 and May 2011. Persons eligible for the @HOME Support Program included HMO subscribers with advanced cancer, chronic obstructive pulmonary disease (Global Initiative for Chronic Obstructive Lung Disease stage III-IV and/or cor pulmonale), or congestive heart failure (New York Heart Association stage III-IV). Persons disabled by multiple conditions, including metabolic, neurologic, primary muscular diseases, and toxic disorders, were also eligible. These criteria are similar to hospice eligibility requirements. However, they do not include the requirement of limited prognosis, and there are no restrictions on the receipt of concurrent curative treatments.

Data Analysis

In order to analyze pre- and postcomparisons of service consumption and cost outcomes for program participants, we sorted all claims data by month, with a 13-month time line for each individual: 6 months preentry, entry month, and 6 months postentry month. The preentry period was defined as the 6-month period prior to program entry. The entry month was the 1-month period following program entry and the postentry period was the following 6-month period. To evaluate service consumption, claims were classified into 1 of the 4 categories of service: inpatient, outpatient, emergency, and home. To ensure comparability of costs across the span of the study, costs for each month were indexed to inflation. All costs were consumer price index adjusted to May 2011 dollars.

The data analysis proceeded in several steps. First, we used independent samples *t*-tests, with HMO plan type (A vs B) as the independent variable, to predict the use of @HOME Support services. Separate *t*-tests were conducted to examine different aspects of service use, including length of stay and the total number of routine visits, on-call visits, phone visits, care coordination calls, skilled nursing services, health aid services, social work services, and the total number of services across all categories. Second, we used paired *t*-tests to compare the pre- versus postentry periods in terms of service use and costs. Separate paired *t*-tests were conducted for each service use and cost outcome, with time period (pre vs post) as the independent variable. The dependent variables included several different types of service use (inpatient, outpatient, emergency room, and home care services) as well as the associated cost outcomes for each of these service categories. Because we observed differences between plan A and plan B participants in terms of demographic characteristics and service use, separate analyses were conducted for participants in the 2 different plans. Finally, based on the results we obtained from the second step, we conducted additional analyses as a means of more fully exploring the dynamics of service use and costs among the @HOME Support participants. For the plan A participants, this involved conducting separate analyses for 2 groups: those who died during the first 6 months of participation and those who survived

Table 1. Participant Demographic Characteristics (n = 148).

Characteristic	Plan B	Plan A	P Value ^a
Age at first admittance	53.03 (9.42)	69.01 (15.04)	<.001
Gender			
Male	41.5	57.8	.036
Female	58.5	42.2	
Race			
African American	15.4	23.2	.450
Caucasian	83.1	74.4	
Other	1.5	2.4	
Religion			
Protestant	50.8	56.4	.411
Catholic	27.9	29.5	
Agnostic/none	18.0	9.0	
Orthodox	1.6	3.8	
Muslim	0.0	1.3	
Jewish	1.6	0	
Cancer status			
Cancer	92.3	48.2	<.001
Not cancer	7.7	51.8	
Marital status			
Divorced	10.8	9.6	.003
Married	73.8	50.6	
Separated	4.6	2.4	
Widowed	3.1	25.3	
Unknown	7.7	12.0	
Caregiver type			
Spouse/partner	72.3	48.2	<.001 ^b
Adult child	9.2	37.3	
Other ^c	12.3	8.4	
No caregiver	6.2	2.4	
Paid professional	0	2	
Unknown	0	1	

^aP value obtained from t-test (age at first admittance) and chi-square test (all other variables).

^bChi-square test was conducted on first 3 categories only (spouse/partner, adult child, and other) due to empty cells for some of the other categories.

^cIncludes friend, niece/nephew, parent, or sibling.

this period. For the plan B participants, we conducted separate analyses for those who had at least 1 high (>US\$70 000) post-entry costs and those who did not incur these high costs.

Results

Study Population Characteristics

Demographic characteristics of persons in the intervention group receiving @HOME Support services were separated by HMO (plan A vs plan B) in Table 1. We observed no differences in terms of race or religious categories by HMO status ($P > .05$). Plan A participants were older than plan B participants at the time of admission to the program (69.01 vs 53.03; $P < .001$) and were more likely than plan B participants to be male (57.8% vs 41.5%; $P = .03$). We observed significant differences in marital status ($P = .003$), with plan A participants more likely to be widowed (25.3% vs 3.1%) and less likely to be married (50.6% vs 73.8%) compared to plan B participants. Significant differences were also observed for

Table 2. @HOME Support Service for Plan B and Plan A (n = 148).

Variable	Plan B, mean (SD)	Plan A, mean (SD)	P
Length of stay	145.03 (231.28)	238.6 (269.00)	.007
Total # of services	51.32 (41.72)	92.67 (143.70)	.014
Total # routine visits	16.02 (18.70)	55.94 (110.98)	.002
Total # on-call visits	0.78 (1.33)	0.98 (2.45)	.572
Total # phone visits	3.49 (5.03)	4.58 (6.72)	.279
Total # care coordination calls	9.35 (8.62)	7.58 (10.39)	.269
Total # of skilled nursing services	30.69 (25.82)	40.16 (46.91)	.121
Total # of health aid services	3.89 (9.65)	30.82 (80.40)	.003
Total # of social work services	14.77 (16.62)	18.78 (24.67)	.262

Abbreviation: SD, standard deviation.

caregiver status ($P < .05$), with adult child caregivers more common for plan A members, relative to plan B members (37.3% vs 9.2%), and spouse caregivers less common among plan B members compared with plan A (48.2% vs 72.3%).

The Use of @HOME Support Services

@HOME Support services used by intervention group members are shown in Table 2. Intervention group members in the plan A program had significantly longer lengths of stay compared to plan B members (238.60 vs 231.28; $P = .007$). The total number of @HOME Support services was also significantly greater for plan A participants by comparison (92.67 vs 51.32; $P = .014$). Plan A participants had a significantly greater number of routine visits (55.94 vs 16.02; $P = .002$) and health-aid services (30.82 vs 3.89; $P = .003$) compared with plan B participants.

Declines in Health Care Use and Costs for Plan A and B Programs

Plan A participants. We observed decreases in emergency department services and costs; outpatient services and costs; and inpatient services and costs using a series of paired sample *t*-tests comparing pre- and postresults for plan A members. For the outpatient and inpatient categories, the observed differences between pre- and postentry were also statistically significant ($P < .05$). As shown in Figure 1, total costs per month declined US\$3416 per month, from an average of US\$9294 per month at baseline to US\$5878 at 6 months ($P < .001$). The percentage of plan A participants who experienced at least 1 hospitalization decreased from 83% in the 6 months preentry to 54% in the period following entry ($P = .001$). Mean hospital days declined from 7.65 in the 6 months preentry to 5.77 in the period following entry into the program ($P = .027$).

In a subsequent analysis, we stratified pre-post results by whether the patient had died at any time within 6 months after entering the program. The rationale for stratification was that

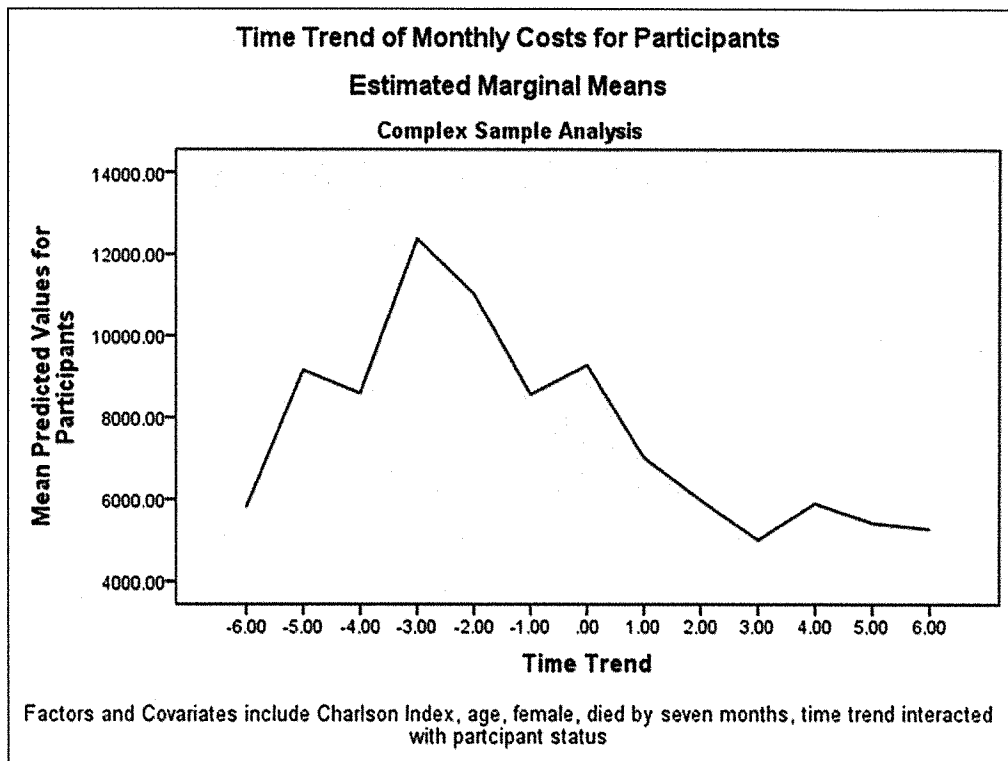


Figure 1. Plan A: trend of monthly costs for participants.

the program is designed to be more effective in terms of cost savings and improvements in QOL for patients within the last 12 months of life and not within relatively short time periods between program enrollment and death. For patients who survived at least 6 months postentry, the total average savings per month equaled US\$3829, a decline from an average of US\$8696 to US\$4867 per month ($P < .001$). In contrast, for patients who died before the end of the 6-month period postentry, there was a nonsignificant decline of US\$2350 (US\$10835-US\$8485, $P > .05$). For those who survived at least 6 months, the percentage of hospitalized dropped from 84% to 54%. We also observed statistically significant reductions in the average number of days hospitalized in the pre- and postperiods for participants who survived for at least 6 months (6.6 vs 4.3 days; $P = .008$). Statistically insignificant declines were observed in the average days of hospitalization and the percentage of hospitalized for patients who had died within 6 months following entry.

Plan B participants. Since cost and the use of health care services typically increase in the last weeks of life, we completed separate analyses based on postentry costs. For plan B participants, costs differed substantially based on whether participants had at least 1-month postentry during which monthly costs exceeded US\$70 000. In contrast to the results for plan A, where only 3 members of the sample had such high costs postentry, 20.3% of plan B participants had at least 1-month postentry where total costs exceeded US\$70 000. These

participants had a very different pattern of service usage and associated monthly costs following entry than the 79.7% of the participants with lower monthly costs. For these reasons, the results are presented separately for these 2 groups, in the analysis subsequently.

1. Participants where all monthly costs postentry $<$ US\$ 70000.
2. Participants where at least 1 monthly cost \geq US\$70000.

We compared pre- and postresults for plan B participants stratified by whether costs greater than US\$70 000 were observed at least 1 month postentry using a series of paired sample *t*-tests.

For the nearly 80% of the lower cost patients, average monthly outpatient costs declined from US\$6322 to US\$2849 ($P = .001$) and the number of outpatient services were reduced from 25.4 to 16.0 ($P = .001$). Although the differences did not reach conventional levels of statistical significance, the declines in mean inpatient costs and mean total costs was nevertheless substantial. Average inpatient costs decreased from US\$12 197 to US\$8786, while average total costs decreased by US\$5006 from US\$18 787 to US\$13 781. The proportion of patients with at least 1 hospitalization declined from 0.85 to 0.63 ($P < .01$).

In the high-cost subsample, statistically significant reductions in outpatient costs (US\$6415-US\$2385; $P = .002$) were accompanied by dramatic increases in inpatient costs (US\$14

156-US\$45 570; $P = .003$), leading to an overall increase in average total costs pre- and postentry from US\$20 845 to US\$51 435 ($P = .004$). There was a nonsignificant increase in the proportion of patients with at least 1 hospitalization, from 0.93 to 1.00 ($P = .34$). The plan B claims dataset did not include the number of days hospitalized.

Discussion

The @HOMe Support program provides an interdisciplinary, home-based program for persons with advanced illnesses and their caregivers. Based on the Chronic Care Model, the program focuses on disease management, symptom relief, health system navigation, shared goals of care decision making, and caregiver support. The present study examines service use and cost trends associated with that program as a means of informing future program development and intervention efforts.

The finding that cost reductions were observed among plan A subscribers surviving at least 6 months has important implications, confirming the value of early identification and enrollment before the onset of terminal decline. The large and significant increase in costs among those high-cost plan B patients suggests that the interventions came very late in the illness process. Future efforts should stress the earlier identification of potential high-cost users so that appropriate services and support can be provided in a more timely and efficient manner.

Study results indicate that home costs and services increased but were offset by substantially more reductions in the average costs. In all cases, the declines observed in number and costs of services were more substantial for those patients who survived for at least 6 months in the program. The small differences between pre- and postentry were not statistically significant for participants who died within the first 6 months. These results confirm the goal of the study to prove the value of earlier service enrollment.

Study results also indicate statistically significant declines in the average number of days hospitalized for plan A members who survived for at least 6 months. However, we also observed small but statistically nonsignificant reductions in the average days of hospitalization and the percentage of hospitalized for patients who had died within 6 months.

A primary limitation of this study is the use of administrative claims data for research purposes. The claims database provided by partnering HMO's lacked important variables such as the date of death, date of discharge to hospice, and others about illness severity, which are better predictors of death within a relatively short time frame. In some cases in which costs abruptly ended, there was no way to determine whether the cause was death, a change in coverage, or loss of coverage. The absence of these data made it impossible to define a comparison group. Including these variables into future prospective rather than retrospective studies would increase the probability that participants and comparison group members are similar on terminal-illness characteristics.

The lack of comprehensive outcome variables in claims data should also be considered and remedied structured in future studies. Data on hospital days were not available for the plan B sample, and we were unable to obtain comprehensive information about plan B hospice election. The inclusion of additional variables would also provide more comprehensive information on program outcomes. For example, given the emphasis placed by the @HOMe Support program on providing psychosocial support to improve QOL, the QOL indicators should be included for both the patients and their caregivers, so researchers could better ascertain QOL outcomes for both participants and comparison group members.

Conclusion

The rapidly growing number of adults living with serious chronic diseases, the emerging role of caregivers, and concerns with escalating costs of end-of-life care suggest the urgent need for the development and evaluation of programs such as @HOMe Support that provide care coordination and psychosocial support for patients and caregivers in this cohort.

This study challenges the current perception that adding home-based services contributes to escalating health care costs. Our findings suggest that a preventative, home-based strategy that adds services and benefit can lower total health care costs for participants. Development of appropriate comparison groups will strengthen this emerging model of advanced illness care.

The patient-caregiver dyad provides a unique opportunity for future research initiatives. The impact of a preventative caregiver model on the well-being and health care costs of family caregivers needs to be examined. Research into the unmet needs and the shared experience in illness management performed by family caregivers is limited, with the primary focus having been on the adverse effects that potentially need intervention, rather than examining the role prevention might play in support.^{25,26} Although there is a breadth of research on the adverse effects on caregivers, little is known about the role of a program such as @HOMe Support could potentially play in ameliorating caregiver anxiety, depression, strain, and mortality.

For institutions that provide coverage for patients and associated family members, further study of the potential benefits and additional cost savings in preventing the morbidity and mortality that have been shown to affect caregivers may prove beneficial. The potential preventative nature of @HOMe Support for caregivers will be a focus of further investigation. As the burdens of managing chronic conditions and providing end-of-life care continue to shift to family caregivers, novel models such as @HOMe Support will be increasingly necessary.

Acknowledgment

Thanks to Blue Cross Blue Shield of Michigan Foundation.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by Blue Cross Blue Shield of Michigan Foundation, grant # 1656.II: "Evaluation of the @HOME Support Program."

References

- Chronic diseases, the power to prevent, the call to control; at a glance 2009. 2009 CDC's National Center for Chronic Disease Prevention and Health Promotion. <http://www.cdc.gov/chronicdisease/resources/publications/aag/chronic.htm>. Accessed January 9, 2013.
- Conwell LJ, Cohen JW. *Characteristics of People With High Medical Expenses in the US Civilian Non-Institutionalized Population, 2002*. Statistical Brief #73, Rockville, MD: Agency for Healthcare Research and Quality; 2005. <http://meps.ahrq.gov/mespweb/datafiles/publications/st73/stat73.pdf>. Accessed January 9, 2013.
- Wright AA, Katz IT. Letting go of the rope—aggressive treatment, hospice care, and open access. *New Engl J Med*. 2007; 357(4):324-327.
- Basta LL. Better late than never: how congestive heart failure patients die. *Am J Geriatr Cardiol*. 2004;13(6):321-322.
- Byock IR, Forman WB, Appleton M. Academy of hospice physicians' position statement on access to hospice and palliative care. *J Pain Symptom Manage*. 1996;11(2):69-70.
- Levenson JW, McCarthy EP, Lynn J, Davis RB, Phillips RS. The last six months of life for patients with congestive heart failure. *J Am Geriatr Soc*. 2000;48(5 suppl):S101-S109.
- Piotrowski J. Room for improvement. Report: access to hospice, palliative care "mediocre". *Mod Healthc*. 2002;32(48):16.
- Moon M, Boccuti C. *Medicare and End of Life Care*. Washington DC: The Urban Institute; 2002. http://www.urban.org/UploadedPDF/1000442_Medicare.pdf. Accessed July 9, 2009.
- Engelhardt J, McClive-Reed K, Toseland R, Smith T, Larson D, Tobin D. Effects of program for coordinated care of advanced illness on patients, surrogates, and health care costs: a randomized trial. *Am J Manage Care*. 2006;12(2):93-100.
- Brumley R, Enguidanos S, Jamison P, et al. Increased satisfaction with care and lower costs: results of a randomized trial of in-home palliative care. *J Am Geriatr Soc*. 2007;55(7):993-1000.
- Spettel CM, Rawlins WS, Krauker R, et al. A comprehensive case management program to improve palliative care. *J Palliat Med*. 2009;12(9):827-832.
- Finn JW, Pienta KJ, Parzuchowski J, Worden F. Palliative care project: bridging active treatment and hospice for terminal cancer [ASCO abstract 1452]. *Proc Am Soc Clin Oncol*. 2002;21.
- McClure LA, Parzuchowski JS, Pienta KJ, Finn J, Roth R. A palliative care program that decreases caregiver burden [ASCO abstract 1558]. *Proc Am Soc Clin Oncol*. 2001;20.
- Wagner EH. Chronic disease management: what will it take to improve chronic illness? *Eff Clin Pract*. 1998;1(1):2-4.
- American College of Physicians. The Chronic Care Model; 2013. http://www.improvingchroniccare.org/index.php?p=The_Chronic_Care_Model&s=2. Accessed January 9, 2013.
- Callahan CM, Boustani MA, Unverzagt FW, Austrom MG, Damush TM, Perkins AJ. Effectiveness of collaborative care for older adults with Alzheimer disease in primary care: a randomized controlled trial. *JAMA*. 2006;295(18):2148-2157.
- Drennan V, Iliffe S, Haworth D, Tai SS, Lenihan P, Deave T. The feasibility and acceptability of specialist health and social care team for the promotion of health and independence in "at risk" older adults. *Health Soc Care Community*. 2005;13(2): 136-144.
- Hughes SL, Weaver FM, Giobbie-Hurder A, et al. Effectiveness of team-managed home-based primary care: a randomized multicenter trial. *JAMA*. 2000;284(22):2877-2885.
- Sommers LS. Physician, nurse, and social work collaboration in primary care for chronically ill seniors. *Arch Intern Med*. 2000; 160(12):1825-1833.
- Silveria M, Kim S, Langa K. Advance directives and outcomes of surrogate decision making before death. *New Engl J Med*. 2010; 362(13):1211-1218.
- Dionne-Odom M, Bakitas JM. Why surrogates don't make decisions the way we think they ought to. *J Hosp Palliat Nurs*. 2012;14(2):99-106.
- Vig E, Taylor J, Starks H, Hopley E, Fryer-Edwards K. Beyond substituted judgement: how surrogates navigate end of life decision making. *J Am Geriatr Soc*. 2006;9(2):451-463.
- Linden A, Butterworth SW, Prochaska JO. Motivational interviewing-based health coaching as a chronic care intervention. *J Eval Clin Pract*. 2010;16(1):166-174.
- American Geriatrics Society Expert Panel on the Care of Older Adults with Multimorbidity. Patient-centered care for older adults with multiple chronic conditions: a stepwise approach from the American geriatrics society. *J Am Geriatr Soc*. 2012;60(10): 1957-1968.
- Grande G, Stajduhar K, Aoun S, et al. Supporting lay carers in end of life care: current gaps and future priorities. *Palliat Med*. 2009; 23(4):339-344.
- Schultz R, Beach SR. Caregiving as a risk factor for mortality: the caregiver health effects study. *JAMA*. 1999;282(23):2215-2219.