Better Access, Quality, and Cost for Clinically Complex Veterans with Home-Based Primary Care

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[See Editorial Comments by Peter A. Boling and Bruce Leff, pp 1974–1976]

In successfully reducing healthcare expenditures, patient goals must be met and savings differentiated from cost shifting. Although the Department of Veterans Affairs (VA) Home Based Primary Care (HBPC) program for chronically ill individuals has resulted in cost reduction for the VA, it is unknown whether cost reduction results from restricting services or shifting costs to Medicare and whether HBPC meets patient goals. Cost projection using a hierarchical condition category (HCC) model adapted to the VA was used to determine VA plus Medicare projected costs for 9,425 newly enrolled HBPC recipients. Projected annual costs were compared with observed annualized costs before and during HBPC. To assess patient perspectives of care, 31 veterans and caregivers were interviewed from three representative programs. During HBPC, Medicare costs were 10.8% lower than projected, VA plus Medicare costs were 11.7% lower than projected, and combined hospitalizations were 25.5% lower than during the period without HBPC. Patients reported high satisfaction with HBPC team access, education, and continuity of care, which they felt contributed to fewer exacerbations, emergency visits, and hospitalizations. HBPC improves access while reducing hospitalizations and total cost. Medicare is currently testing the HBPC approach through the Independence at Home demonstration. **J Am Geriatr Soc 62:1954–1961, 2014.**

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The U.S. currently faces serious challenges to improving population health, improving the care experience, and reducing total care cost.[1,2] Escalating healthcare expenditures, driven by an aging population and rising care costs, have prompted efforts to restrict access or payment.[3,4] The fastest-growing sector of the U.S. population, individuals aged 85 and older, grew 30% between 2000 and 2010;[5] in this same period, the comparable veteran population nearly tripled. In the general aging population, expenditure growth is concentrated in a small fraction of individuals, with 5% of Medicare recipients generating 50% of Medicare expenditures.[2,6] In the Department of Veterans Affairs (VA), 2% of veterans account for 36% of VA healthcare costs, and 7% account for half of VA costs.

The Congressional Budget Office (CBO) reported that, although Medicare costs rose 29% per recipient from 1998 to 2005 (4.4% per year), VA costs rose only 1.7% per person over those 7 years (0.3% per year). The CBO suggested that one important element of the VA's cost containment was growth of programs such as Home Based Primary Care (HBPC), specifically designed for the highest-cost sector: individuals with serious chronic disabling diseases, many of whom are homebound.[7]

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Home Based Primary Care is comprehensive longitudinal primary care delivered in home by an interdisciplinary team, including a physician, nurse, social worker, rehabilitation therapist (occupational therapist, physical therapist, kinesiotherapist), dietitian, psychologist, and pharmacist. In addition to these required disciplines, many programs include a midlevel provider (nurse practitioner, physician assistant) and other providers such as chaplains and recreational therapists. VA HBPC specifically focuses on individuals with complex, chronic, disabling disease, for whom routine clinic-based care is often not effective,[8] and is different from and complementary to usual Medicare home care. HBPC targets multiple serious chronic conditions rather than short-term remediable conditions, is comprehensive rather than focused on individual problems, provides longitudinal rather than episodic care, and is interdisciplinary rather than discipline specific. HBPC factors that contribute to success include a single unified care plan, medication reconciliation, caregiver training, and attending to people at home, which facilitates comprehensive understanding of medical and social circumstances.

Home Based Primary Care is a major component of the VA's strategy to shift care from institutional to home and community settings, which is often more patient-centered and potentially lower cost. Between 2000 and 2012, the number of veterans aged 85 and older tripled, and the HBPC census increased from 7,300 to 30,000, whereas the VA-provided nursing home care census rose only 20%, from 30,700 to 36,000. On the VA's 2007 National Patient Satisfaction Survey, 83% of veterans rated HBPC care as very good or excellent, the highest overall satisfaction rating of all VA care programs. In a 2002 longitudinal pre–post analysis of 11,334 individuals, HBPC enrollment was associated with a 24% total VA cost reduction ($P < .001$).[8] In a similar 2007 analysis, HBPC enrollment was associated with reductions in VA hospital bed-days of care (59%), nursing home bed-days of care (89%), and 30-day hospital readmissions (21%).[8] Despite these promising findings, there are limitations of pre–post analyses, and the effect on total cost remains uncertain. Robust methods of analysis are needed in addition to randomized controlled trials to meet the challenges of evaluating complex interventions involving diverse populations with variable comorbidities receiving individualized care in a rapidly evolving healthcare system. Another methodology to project population cost that the Centers for Medicare and Medicaid Services (CMS) uses is the hierarchical condition category (HCC) model, a validated risk adjustment method[9,10] widely used in computing expected costs in shared savings programs and CMS demonstrations. By using an individual, risk-adjusted projection, bias in pre–post analyses from regression to the mean effects can be avoided.

Using the HCC model, this study undertook to determine whether HBPC reduces federal government (VA plus Medicare) (VA+MC) healthcare utilization and costs without restricting services or shifting costs from the VA to Medicare. To address concerns about natural cost variation, total cost of care during HBPC was compared with projected cost for the same population. To address quality of experience and perceptions of potential restrictions of services, the veteran and family perspective was examined using a qualitative evaluation.

DESIGN AND METHODS

Cost Analysis

Data Sources

To determine the effect of HBPC on VA+MC costs and to distinguish cost savings from cost shifting, concurrent analyses of VA and Medicare costs and usage for fiscal year (FY) 2006 (10/1/05–09/30/06) were performed. For veterans newly enrolled in HBPC, matching Medicare and VA enrollment files identified the subset dually enrolled in VA and Medicare. VA costs for all directly provided or purchased care, including inpatient, outpatient, long-term services and supports (LTSS), and pharmacy for 6 months during HBPC enrollment were obtained from the VA 2005–07 Decision Support System National Data Extract. Concurrent Medicare Part A and B person-level costs were computed by aggregating claims-level costs from Medicare fee-for-service Standard Analytical Files (inpatient, outpatient, skilled nursing, home health, hospice, physician/suppliers and durable medical equipment). Medicare data were obtained from CMS under a data use agreement between VA and CMS. VA and Medicare costs were combined to create a merged total VA+MC actual cost file.

Cost Projection Method and Validation

The cost-projection methodology using concurrent HCC scores, which use coded diagnoses, interaction of multiple comorbidities, and demographic factors, but not prior utilization, to yield projected cost, was adapted to the VA and then tested for calibration. Cost-projection models are prospective or concurrent, which reflects the relationship between diagnostic codes and other factors used to project cost and the occurrence of costs. Prospective models use diagnoses from 1 year to project costs for a future period. Concurrent models use the diagnoses from 1 year to project costs for that year. Concurrent models explain more of the variation in costs (with correlation coefficients (r^2) of 0.48–0.58 vs 0.09–0.12 for prospective models) and are useful for evaluation of past behavior. Concurrent models emphasize acute conditions over chronic conditions more than prospective models. These acute exacerbations of chronic conditions are more likely than stable chronic conditions to drive the cost experience after enrollment in HBPC in what is frequently a period of posthospital clinical instability.

Calibration. Concurrent coefficients for the CMS HCC model most appropriate to a geriatric population (version 21) were estimated using total VA+MC actual costs, and the concurrent VA-HCC model was used to project annual costs for the HBPC population.[11,12] To test calibration and validity, the 6.6 million non-HBPC veterans were divided into deciles according to projected total cost, comparing projected costs with actual VA+MC costs using the new VA-HCC model. To assess validity in the highest-cost group, the top 10% cost decile was broken into 1% cohorts, and projected and actual costs were compared.

Model Residual Cost Variable. The VA provides a broader array of services than fee-for-service Medicare

to treat a homebound frail population, including noninstitutional LTSS such as homemaker or home health aide, adult day health care, and respite. Eligibility for these geriatric and extended care (GEC)-administered noninstitutional and institutional supports requires significant impairments in cognition and activities of daily living (ADLs), equivalent to Nursing Facility Clinically Eligible (NFCE) status in state Medicaid programs. The CMS-HCC model does not include those long-term care costs. To account for costs of services that Medicare does not cover and for HBPC population frailty,[8] a VA GEC programmatic variable was included while recalibrating the model, based on veterans receiving VA-purchased or -provided noninstitutional care services. The programmatic variable, with a value of 1.98, functions similarly to the Medicaid demographic variable plus frailty adjustment in the CMS-HCC model when applied to Program of All-Inclusive Care for the Elderly participants, accounting for the cost residual from the HCC model when applied to a frail, clinically complex population.[13] This recalibrated VA-HCC model was validated by comparing projected with actual costs of each decile of the 6.6 million veterans and the top 10 cohorts.

Cost Projection. After validation of the adapted model with 6.6 million veterans, the VA-HCC model was used to project VA+MC costs for 9,425 veterans newly enrolled in VA HBPC during 2006. These veterans were divided into deciles according to VA-HCC score; projected VA+MC cost was compared with actual VA+MC cost.

Cost Category Effects. The HCC model has demonstrated utility for projecting total costs but does not provide information on service use or categorical costs. Therefore, a different method was used to examine patterns of healthcare use (e.g., acute hospital days, skilled nursing facility days) and cost according to healthcare category (e.g., acute inpatient, outpatient, home care), before and during HBPC. For the 9,425 veterans enrolled in HBPC during FY2006, VA+MC use and costs that each veteran in the 6 months incurred before HBPC enrollment were compiled from the previously merged files. These were compared with VA+MC use and costs during the subsequent 12 months while in HBPC, normalized to 6 months of program exposure. This method provided estimated proportionate distribution of use and costs and allowed comparison of HCC cost projection with longitudinal case–control cost analysis.

Qualitative Approach. Veterans and caregivers were interviewed about HBPC perceptions at the Memphis, Tennessee; Sacramento, California; and Tucson, Arizona HBPCs, representing geographic variation and established programs. A purposive sampling strategy[14] identified veterans with family caregivers with recent (6–12 months) and longer (≥2 years) HBPC experience.

In-home interviews used a semistructured interview guide focusing on services received, HBPC experience, transition to HBPC, and changes in health or quality of life during HBPC. Interviews were audiotaped, transcribed, coded, and analyzed.[15–17] The coding interrater reliability kappa statistic[18] was 0.822.

RESULTS

Sample

The 9,425 HBPC veterans were predominantly male (96%) and older (77.7 ± 10.0), with 69% dependent in two or more ADLs; 50% were married, and 32% of spouses were limited in ADLs. HBPC veterans had, on average, more than eight physical and mental health conditions, median survival of 38 months, 1-year survival of 76%, and 5-year survival of 33%. The 6,951 HBPC veterans enrolled in Medicare were older than the 2,474 HBPC veterans not enrolled in Medicare (78.4 ± 9.8 vs 70.8 ± 13) and had lower 1-year survival (72.7% vs 81.9%). The HBPC Medicare veterans had higher average CMS-HCC (3.31 vs 2.22) and VA-HCC (5.29 vs 4.21) scores than the HBPC non-Medicare veterans. Mean observed/projected cost ratios were similar: 1.005 ($48,894/$48,642) for VA+MC veterans and 1.053 ($40,807/$39,645) for VA-only veterans. The qualitative sample of veterans mirrored the national HBPC population in demographic characteristics and medical complexity. Of 17 veterans interviewed, 14 had family caregivers who were interviewed; 64% of those caregivers had their own medical problems.

Calibration and Validation of Cost Projection

Using CMS-HCC scores to subdivide the population into deciles, then into 10 cohorts for the top decile, observed and projected cost comparisons demonstrated a close match for all deciles and the highest-cost cohorts (Figure 1A, B). VA-HCC scores (adjusted for non-MC costs and frailty) demonstrated the same degree of calibration. Figure 1C shows the 10th decile of VA-HCC scores, most relevant for HBPC veterans. Applying the programmatic variable of 1.98 to the combined VA+MC per capita cost of $9,152/HCC unit, cost attributed to this programmatic variable was $18,121. Overall VA-HCC model r^2 was 0.53, consistent with a CMS-estimated concurrent model r^2 of 0.56.

Quantitative Results

Observed Effect on Medicare and VA

For the 6,951 HBPC and Medicare dually enrolled veterans, HBPC enrollment was associated with a 13.4% annualized reduction in total combined VA+MC costs (not adjusted for frailty or VA care differences), 16.7% reduction in VA costs, and 10.8% reduction in Medicare costs, driven primarily by less hospitalization. There was a 25.5% reduction in combined VA+MC hospital admissions and 36.5% reduction in combined hospital days, contributing to a combined VA+MC cost net reduction from $45,980 to $39,796 per patient per year including HBPC costs ($9,116/patient per year) (Table 1).

Risk-Adjusted Effect on Medicare and VA

Without HBPC, mean VA+MC annual costs projected by risk-adjusted HCC ($45,061 ± 3,478) were nearly identi-

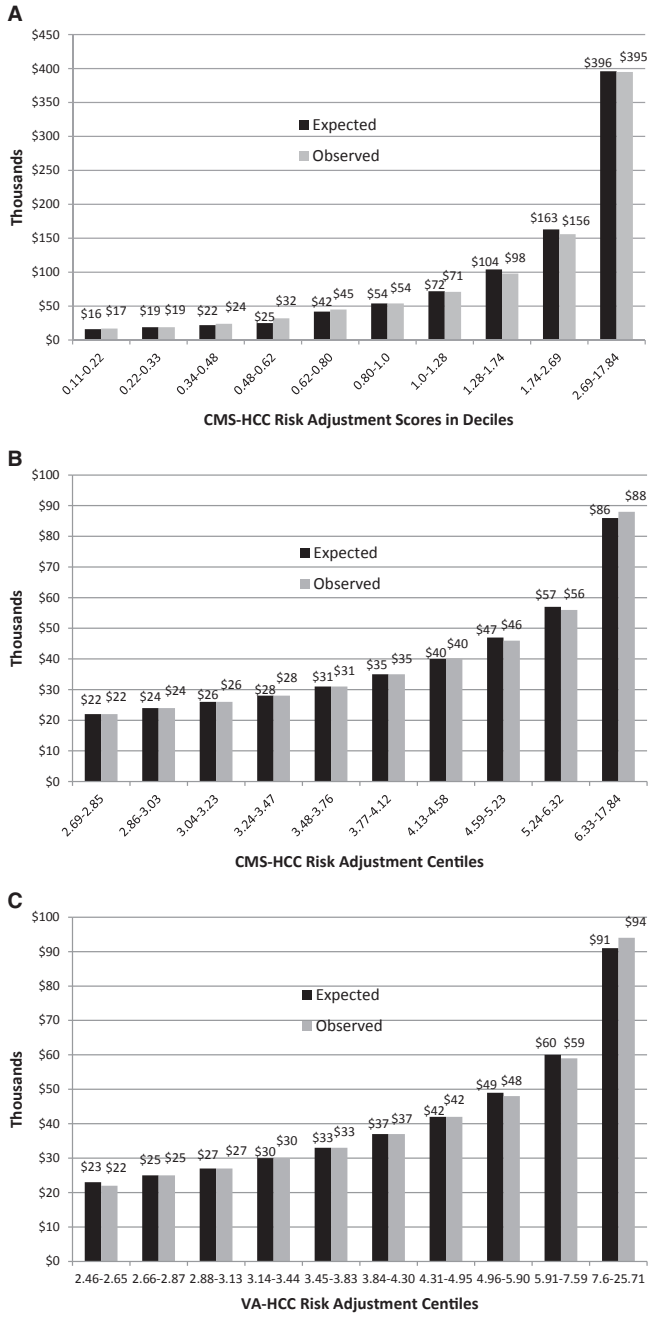

Figure 1. Average expected and observed costs according to Centers for Medicare and Medicaid Services (CMS) hierarchical condition category (HCC) risk adjustment model: (**A**) All veteran population (n = 6.6 million) according to decile, 2006. (**B**) Top decile (n = 660,000) of veteran population according to centile, 2006. (**C**) Average expected and observed costs according to Department of Veterans Affairs (VA) HCC risk adjustment model: Top decile (n = 660,000) of veteran population according to centile, 2006; model includes adjustment for non-Medicare services and frailty.

cal to observed costs ($45,980 ± 34,383). The observed annualized cost during HBPC was $39,796 ± 33,472, 11.7% lower than projected cost ($t = 17.47$, $P < .001$). When organized according to VA-HCC risk deciles, annualized costs during HBPC were less than projected for all deciles (Figure 2). Comparing projected with actual HBPC cost, cost reductions were greater at higher risk levels.

Estimated VA costs according to spending categories are shown in Table 2 using 6-month longitudinal case–control comparison. They demonstrate the same pattern found in the 2002 study,[8] with large reductions in nursing home and hospital costs, slightly higher total outpatient costs (including pharmacy), and larger homecare costs, which include HBPC cost. Veterans, on average, had 2.9 HBPC visits per month.

Qualitative Results: HBPC Experience from Veteran and Family Perspective

Home visits allowed staff to establish trusting relationships with veterans and caregivers (Table 3). While providing care, staff gathered information about veterans' and caregivers' health, emotional state, needs, informal supports, concerns, and goals. Coordination between interdisciplinary team members resulted in a comprehensive clinical picture that improved care because staff could create and implement personalized care plans.

No veterans or caregivers reported any perception of restriction of services from HBPC. Instead, many described how HBPC prevented avoidable hospitalizations, allowed them to continue living at home, and often meant the difference between receiving and not receiving care. Veterans spoke about frustration with clinic-based provider changes and clinic access difficulties because of their condition, distance, travel costs, and transportation challenges. Participants valued the ability to call their HBPC team with concerns, which relieved anxiety and offered an alternative to emergency department visits. Veterans and caregivers learned strategies for self-care and caregiving and how to identify and respond to disease exacerbation. Nurses filled medication boxes for 88% of veterans, who reported that the team reviewing medications for effectiveness, side effects, or drug interactions ensured that the right medications were taken at the right time in the right dose.

Of particular importance to veterans and caregivers was their relationship with the care team. Veterans and caregivers said HBPC staff were "just like family," made them feel safer, and served as their "anchor." Veterans and caregivers consistently identified HBPC as having positive effects on health, quality of life, and psychological well-being, commenting that, without HBPC, they "wouldn't be here talking."

DISCUSSION

This mixed-methods analysis demonstrated two complementary findings: VA HBPC reduced total costs of care to VA and Medicare, eliminating cost-shifting to Medicare as an explanation for reduced costs, and veterans and their family caregivers reported greater access to care, stronger relationships with staff, better quality of care, and enhanced quality of life, indicating that savings were achieved by adding, not restricting, services.

Home Based Primary Care veterans have multiple chronic diseases and challenges in living at home. HBPC

Table 1. 2006 Use and Costs for Newly Enrolled, Dual Department of Veterans Affairs (VA) and Medicare Home Based Primary Care (HBPC) Beneficiaries (n = 6,951), 6 Months Before and During HBPC Enrollment

Variable	Before	During	*P*-Value[c]	Change (95% Confidence Interval) %
Medicare hospital days[a]	4,511	4,161	<.001	−7.8 (−8.4 to −7.1)
Medicare skilled nursing facility days[a]	5,559	5,594	.68	0.6 (0.4–0.7)
Total Medicare costs per patient, $ (6 months)	4,025	3,590	<.001	− 10.8 (−11.5 to −10.1)
VA hospital days[a]	8,877	4,339	<.001	−51.1 (−52.3 to −49.9)
Total VA costs per patient, $ (6 months)[b]	19,234	13,822	<.001	−28.1 (−29.2 to −27.1)
VA + Medicare hospital admissions per 100 patient-months	15.7	11.7	<.001	− 25.5 (−26.5 to −24.5)
VA + Medicare hospital days[a]	13,388	8,500	<.001	−36.5 (−37.6 to −35.4)

[a] Per 1,000 beneficiaries per year for 6,951 Medicare-enrolled veterans.
[b] Including HBPC costs of $9,116/beneficiary per year.
[c] Paired *t*-test comparing pre–post change.

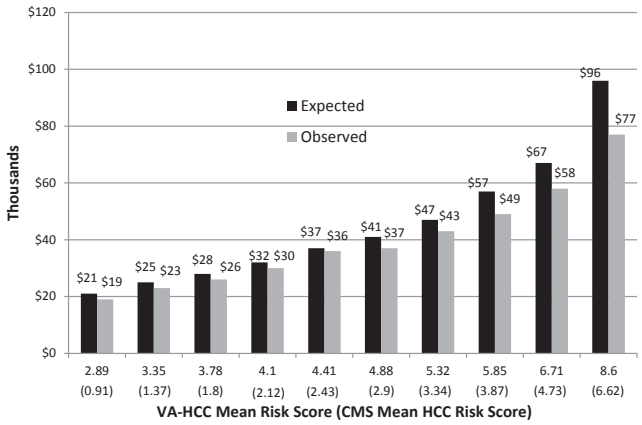

Figure 2. Average annualized expected and observed costs according to Department of Veterans Affairs (VA)-hierarchical condition category (HCC) risk adjustment model: Home Based Primary Care new admissions (n = 9,425) according to decile, 2006.

functions as an intensive medical home for these frailest, most-complex veterans, who benefit from in-home services from an interdisciplinary team. Although HBPC is an expensive, complex intervention, it correlates with net cost reduction when focused on high-cost veterans at high risk of VA and Medicare inpatient episodes. The value of targeting is reflected in Figure 2, which shows that magnitude and proportion of cost reduction were greater with higher risk scores. Unlike traditional outpatient care but similar to other innovative care models such as PACE,[19] HBPC was able to decrease hospitalizations for these high-cost veterans to a greater extent than predicted for high-cost Medicare beneficiaries using a standard algorithm of preventable hospitalizations.[20]

Veterans trusted this type of care, attributing the prevention of avoidable and unwanted hospital and emergency care to HBPC. Staff, veterans, and caregivers reported characteristics of HBPC that have been shown to correlate with fewer hospital readmissions of Medicare beneficiaries,[21] such as better adherence to medication management, individual involvement in healthcare decisions, early recognition of exacerbation of symptoms, and family caregiver support. The qualitative approach confirmed a lack of perceived restrictions in services, which is crucial in evaluating an intervention that reduces costs.

The results of the current study differ from those of a randomized trial of HBPC,[22] which found a similarly significant improvement in individual and caregiver quality of life but no difference in total costs (after accounting for cost of HBPC), but in that trial, the mean time on HBPC was 4.5 months. Thus, half of the evaluation period was without intervention, more reflective of episodic home health services than longitudinal HBPC. Only 78% of individuals in the HBPC arm received HBPC, and 9% of the non-HBPC arm received HBPC. The populations were also different; mortality was 36%, compared with 24% in the current study and 17% to 24% in other HBPC studies showing cost reduction.[8,23]

Table 2. Department of Veterans Affairs Use and Costs, Newly Enrolled Home Based Primary Care (HBPC) Beneficiaries, 2006 (n = 9,425)

	6 Months Before HBPC Enrollment				6 Months During HBPC			
Care Modality	Days/ Encounters	Cost, $	Days/ Encounters per Patient	Average Cost per Patient, $	Days/ Encounters	Cost, $	Days/Encounters per Patient	Average Cost per Patient, $
Acute inpatient	53,139	91,807,731	5.65	9,765	13,330	23,349,462	1.42	2,483
Nursing home	58,587	34,799,802	6.23	3,701	6,652	4,175,052	0.71	444
Outpatient	287,619	40,458,427	30.59	4,303	288,820	45,605,046	30.72	4,851
Home care	6,094	1,995,747	0.65	212	145,271	43,555,349	15.45	4,633
Total				19,234				13,822

Table 3. Benefit Themes Reported by Patients and Caregivers (n = 31)

Theme	Examples[a]
Interactions with staff	
Personalized care	They're like family. [Doctor] knows me very well. . . . They have pictures of our dogs up in their office. (T04—Vietnam veteran)
	That's what I like . . . . It's personal. It's like [Nurse] is my nurse. She's got 30 patients, but she's my nurse. That's the way I look at it. She takes care of me. She knows me. . . . And I appreciate that so much. (M05—Vietnam veteran)
Respectful care, trust	No, when they tell me they're coming, that's when they'll come. (Caregiver of M01-WWII veteran)
	They always call him Mr. _They always wait to be let in and show respect for our time. (Caregiver of T03—Vietnam veteran)
Peace of mind	[They are] just the anchor. It gives me security, health-wise, psychologically. I know I have someone to come out. I know I can phone somebody in an emergency. I know I have the security. I have a doctor I can phone, a nurse I can phone. They will tell me what to do. They will tell my caregiver what to do. (S02—Vietnam veteran)
	I think the nurse coming every week, is the best thing. Cause you feel safer. I mean, you know, that somebody is looking that can check on you. (Caregiver of MO3—WWII veteran)
Access to care	
Care at home	It's a struggle, just getting yourself dressed, you see. . . . So it was really such a real blessing that they can come here and help me do the things they do. (M05—Vietnam veteran)
	I'd have to let him out at the door. He'd sit down, because he can't hold out to walk, and I would go park the car where I could. Sometimes it'd take me a long time. And then I'd come back and put him in a wheelchair and take him in, you know. (Caregiver of M01—WWII veteran)
Comparison to clinic care	There's no comparison [between HBPC and clinic care]. Because the doctor wanted me to come back in 90 days, and then it would be 120 before I could get an appointment. (M02—WWII veteran)
	Well, he dropped through the cracks at one time. . . . And he didn't go for about. . .oh, 6 or 8 months. And then, the new doctor came in and they found his. . .I know that's what happened. Found his record and then he got back in going. And, it was just whenever they'd call him for an appointment. You know, but it wasn't regular and it just wasn't satisfactory at all. (Caregiver of M03—WWII veteran)
Avoiding ED, hospitalization, and nursing home	They kept me out. Yeah, I haven't even had to go to the emergency room, not one time that I remember. . . . When you go from five [ED visits] to none, somebody is doing their job. (M05—Vietnam veteran)
	He would have been in the hospital or a nursing home if we hadn't got into this program. (Caregiver of M03—WWII veteran)
Medication management	They know. They figure out your problems and your medication dosage. And it's very important. They see to it that we get our medication, at the right time. (S04—WWII veteran)
	I think the most important thing is knowing about his medicine. That she takes care of refills and. . . if the medicine changes in the color or something, that was confusing to him and I would have to read all the instructions, and everything, and say, "This is the same medicine. It's just a different color. It's a different product." And, so with this, that's the greatest relief, my relief, is knowing that he's not taking something he's not supposed to take. (Caregiver of M03—WWII veteran)
	. . . I'm on less pain killers than when I first started. I was on 15 painkillers a day, and after we got everything straightened out, it went down to four. (T05—Vietnam veteran)
Education and outreach	
Comprehensive care	I think he gets better care when they come out to your home. You're more relaxed and can talk to them. At the hospital they are in a hurry. They have a lot of work to do and they have a lot of patients. And this way the nurse can spend time with you and they're in no hurry, and they're very patient. They sit and let you talk. (Caregiver of M06—WWII veteran)
	The whole [intake] assessment lasted about 3 hours. We didn't mind. She was very thorough. You know there are things you don't bother to ask about in the doctor's office because you know there isn't time. We were able to talk about a lot of issues that hadn't been addressed before. (Caregiver of T03—Vietnam veteran)
Coordinated care	I mean, they all work together. And the nurse is right on top of it. (Caregiver of M03—WWII veteran)
	They take away a lot of stress. It's nice to be able to call someone and have them take care of it. They always call back and let you know. They're a very good team. They impress me a lot. They always know what's going on. (T04—WWII veteran).
Benefits to caregivers	Well, [HPBP] just about saved my life. . . . Because if I need anything, all I have to do is tell one of them. . . . It's done wonders for me. There would have been a lot of times, like now, that I couldn't hardly make it. . . . But now. . . I believe that I can keep him right here in the house. (Caregiver of M01—WWII veteran)
	My health is better because of the program. I'm less stressed. I know that there are people I can call when I have a concern, and that there's someone who can answer my questions, and that's gone a long way to easing my stress. I think I'm healthier now. (Caregiver of T03—Vietnam veteran)

[a] M = Memphis, S = Sacramento, T = Tucson

The current study has several limitations. Longitudinal case–control comparison is subject to regression to the mean, but this was used only for descriptive comparison of service use, not cost. The HCC projection confirmed the "expected" cost of the veterans without intervention and provided a benchmark not subject to such regression to the mean. An additional programmatic variable was used to account for selection biases and for VA services not accounted for in Medicare. There are limitations to the use of this variable, including incorporating average cost experience for GEC noninstitutional care program–referred veterans that may not be reflective of veterans who are similar to those enrolled in HBPC. The absence of functional status measures for veterans other than those in HBPC or in nursing facilities limits the ability to attribute GEC program costs more specifically to particular individuals and impedes fully adjusting for cost of LTSS that VA covers but Medicare does not. Data come from 2006, the most recent year of Medicare data available when the analysis was conducted in 2009 to strengthen support for the Independence at Home demonstration being part of the 2010 Affordable Care Act.[24] Well-calibrated cost-projection models can have great value in evaluating innovative programs for frail elderly adults, but as with all prediction models, they must be calibrated when applied to new populations.

To allow a comparison of costs during the program with costs incurred without HBPC enrollment, only new enrollees to HBPC were analyzed, so effects may not be generalizable to subsequent years in HBPC. Because projected costs without HBPC were compared with observed HBPC costs during the same year, there was variable time spent in HBPC, from which costs were annualized. Possible cost savings and cost shifting to Medicaid and private pay with HBPC care were not examined. Current work at the VA GEC Data Analysis Center, using an all-payer data set, prospective cost-projection with adjustments for increased mortality, LTSS, and time-dependent frailty, will address these limitations.

The qualitative sample size was small. Because the objective of qualitative research is to understand phenomena in depth (as opposed to broadly), qualitative sample sizes are traditionally small.[25] Participant selection was representative of the HBPC population, increasing confidence that the data validly represent HBPC experiences, but ethnographic data were collected at three sites, which may not fully encompass the range of individuals and experiences in 133 HBPC programs and 30,000 veterans served in 2006.

CONCLUSIONS

The growing number of individuals with serious chronic disease imposes significant costs on Medicare and the VA. The success of VA HBPC in increasing access to patient-centered in-home care while lowering total cost for individuals with serious chronic disabling disease contributed to the Independence at Home demonstration of HBPC in Medicare.[24] This demonstration evaluates interdisciplinary, longitudinal, in-home primary care for Medicare's highest-cost beneficiaries, with multiple chronic conditions. Independence at Home, like HBPC, aims to provide better, more-coordinated care in all treatment settings, reducing duplicative and unnecessary services, avoiding unnecessary hospitalizations, and thereby generating savings. Based on the current study's findings, Medicare savings with widespread adoption of this model may approach $4.8 billion per year.[26]

VA HBPC has demonstrated that access can be increased, quality improved, and total cost of healthcare reduced, not by restricting services, but by adding services.[1] HBPC and Independence at Home, implemented broadly for individuals with serious chronic disease, have the potential to assist healthcare systems, providers, and researchers in rising to the challenge of improving population health and the care experience while reducing total cost of care.[1]

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Conflict of Interest: Dr. Kinosian is an HBPC provider; Dr. Edes has national responsibility for HBPC. Dr. Edes has testified before Congress and MedPAC on the effectiveness of HBPC.

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