Home Palliative Care Savings

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Abstract

Objective: The aim of this study was to evaluate an adult home palliative care (HPC) program for multiple insurance product lines using multiple vendors to determine if the annual costs of health care decreased for those enrolled in HPC.

Study Design: Of the 506 members who were referred to and qualified for palliative care in 2019, a retroactive review was done comparing annual health care costs between the 396 members in the enrolled group and the 110 members in the group receiving usual care.

Methods: The total health care costs for the calendar year 2019 were compared between the group enrolled in HPC and those who received usual care. Cost savings were further evaluated based on whether the member was enrolled in the palliative care program for 1–5 versus 6–12 months.

Results: Overall medical costs for these 396 enrollees for the calendar year 2019 showed a gross savings of $24,643 per member (16.7% decrease in cost). For members enrolled for 1–5 months, annual gross savings were $23,314 per member (15.8% decrease from the comparison group), and for members enrolled for 6–12 months, annual gross savings were $26,409 per member (17.9% decrease). The savings were most prominent for the commercial insurance product with a 51% decrease in annual costs.

Conclusions: Adult home-based palliative care delivered by multiple vendors (consisting of multiple insurance product lines) to a population is effective in decreasing total medical costs by 16.7% during a calendar year compared with a control group. The gross savings for those enrolled for 6–12 months (17.9%) were greater than the gross savings for those enrolled for 1–5 months (15.8%). The savings were most prominent for the commercial insurance product, while an increase in cost was seen for the Medicaid product.

Keywords: advanced illness; health care cost; health care savings; palliative care

Introduction

A previous review of the literature1 has concluded that medical cost utilizing palliative care is usually less costly for patients relative to a comparison group, usually at a statistically significant level. Although a pattern of cost savings is seen, there is great heterogeneity among the population studied, including by age, diagnosis, prognosis, and the setting such as inpatient, home based, or hospice.2 Other studies are often on a predominantly Medicare or elderly population3–12 or focused on members in their last year of life.3–5,7,8,13 Some studies may limit diagnoses to 3–6 different diagnoses,4,9,12,14 with cancer, congestive heart failure (CHF), and chronic obstructive pulmonary disease (COPD) being the most frequently included.

The current study is a retrospective review of 396 adult palliative members, including Medicare, Medicaid, and commercial insurance products, during the calendar year 2019. The population does include younger members with 45.2% of the members being ≤60 years old. This home-based palliative care program contracted with 13 palliative care vendors who serviced 38 counties in the state of California. The study was...
Materials and Methods

The health maintenance organization (HMO) health plan established the palliative care program in 2014. This home-based palliative care program has since expanded to serve Medicaid, Medicare, and commercial members in 38 California counties. The health plan administers this program with the support of two medical directors and one manager who have other areas of responsibility as well. Operationally, five, full-time, palliative care health plan nurses identify potential candidates through data mining, outreach, and engaging other health plan nurses who are involved in concurrent review, transition care management, and case management. Direct referrals from providers are also encouraged. In addition to conducting referral intake and approvals, these nurses also coordinate care between the health plan, medically focused providers, and palliative care vendors.

The health plan contracts with 13 palliative care vendors to deliver care throughout the state. Palliative vendors are most commonly affiliated with hospice organizations, although some are affiliated with home health agencies. Vendors utilize physicians, physician extenders, nurses, social workers, clergy, and coordinators to develop a multidisciplinary care plan and provide home-based palliative care services. All vendors have 24/7 call lines and services are available 24/7.

The program’s current adult census is 341 members, and the pediatric census is 16 members. All diagnoses are accepted. The key indications for eligibility for palliative care are severe progressive disease, using the hospital and emergency department to manage their illness, and the need for an extra layer of support.

Over a one-year period, an HMO health plan sponsored a home palliative care (HPC) program that was open to a select group of members meeting the plan criteria (Table 1). Any combination of criteria was acceptable, with emphasis on severe progressive disease and using the hospital and emergency room to manage their illness. There was no limitation based on diagnosis. Insurance products included commercial, Medicare, and Medicaid. Referrals included direct real-time referrals from providers and vendors, internal referrals from health plan case management and utilization management programs, internal referrals from health plan concurrent review and discharge transition programs, and members identified through data mining of claims for high cost and high risk. The study group included members who were enrolled in HPC for any period of time in the calendar year 2019. All Medicare, all commercial, and 94% of Medicaid members were in shared-risk or fee-for-service contracts, in which the health plan paid hospital and emergency department claims. No elimination of catastrophic cases with very high costs was done. Members who were referred to palliative care, but opted to go directly to hospice rather than palliative care, are not included in the study.

The comparison group (of 110 members) was referred for palliative care and met the criteria for acceptance into the palliative care program, but did not enroll due to either voluntary refusal or inability to make contact.

No institutional review board approval was required for this study.

A retrospective analysis of all paid health care claims was done, comparing the study group costs and comparison group costs for all of calendar year 2019. This included inpatient, outpatient, and pharmacy costs. The cost of the palliative program was not included since palliative care services were reimbursed by invoice, not by claims. The cost of hospice was included in the commercial and Medicaid products. The cost of hospice for Medicare was not included since Medicare members returned to fee-for-service Medicare for the hospice benefit. For both the study group and control group, cost data were for the calendar year 2019 regardless of the duration of enrollment in the HPC program or time enrolled in the health plan during 2019. Pediatric members under 18 years of age were excluded. The commercial product included commercial HMO, preferred provider organization (PPO), and POS (point of service) products. Medicare included Medicare Advantage and Medicare–Medicaid members.

Further analysis was done by comparing the total costs in 2019 for members enrolled in HPC for 1–5 months with the comparison group and those enrolled in HPC for 6–12 months with the comparison group.

Statistical analyses

For comparing characteristics or outcomes for enrollees and controls, we used the chi-square test for proportions and Wilcoxon rank-sum test for continuous values if available. The results were deemed statistically significant at \( p < 0.05 \). All statistical analyses are conducted using R, version 3.6.3.

Results

In the calendar year 2019, 506 members were referred to and qualified for health plan-sponsored HPC. Of the 506 referrals, 396 were enrolled in the program and 110 voluntarily refused, did not qualify, or were unable to be reached. Specific reasons for not enrolling included member/family declined, 24; unable to reach, 11; not in the service area, 7; criteria not met, 4; eligibility already terminated, 1; other, 13; and 50 unknown. Members were assigned to one of 13 vendors in California based on the geographic location.

The sources of referrals for the enrolled group were from health plan case management, 136; palliative care vendor, 80; provider group organization, 48; health plan concurrent review

| Table 1. Referral Criteria for Acceptance into the Home Palliative Care Program |
|---|
| 1. Severe progressive illness, any diagnosis |
| 2. Death is not unexpected within the next one year (surprise question) |
| 3. Using the hospital and/or ED to manage their illness (>2 ED visits and/or hospital admissions within the past six months) |
| 4. Symptoms that are out of control |
| 5. Advance care planning and or POLST discussion required |
| 6. Significant functional decline requiring support services (SW, caregiver, family, and spiritual) |
| 7. High cost (claims or predicted to be at high risk for high cost) |

ED, emergency department; POLST, Physicians Order for Life-Sustaining Treatment; SW, social worker.
nurse, 46; data mining by the health plan palliative care nurses, 38; health plan postdischarge transition care management nurses, 37; physician providers, 7; and other, 4.

The study group was compared with the comparison group for age, sex, insurance product, diagnosis, and ethnicity (Table 2). We found no statistically significant differences between enrollees and controls among those demographic and clinical characteristics \((p > 0.05)\). The most common diagnosis was cancer, representing 43% of the 396 enrollees. Congestive heart failure was the next most common diagnosis. Other diagnoses included COPD, neurologic, end-stage liver disease, end-stage renal disease, coronary artery disease, lymphoma, and others. Of the study group, 58% were Medicaid, 21% were Medicare, and 21% were commercial insurance recipients. Ethnicity shows that 43% were Caucasian, 26% were Hispanic, and 19% were unknown. Equal percentages of male and female patients were enrolled. Age bands revealed 37.1% to be of age 41–60 years, 36.4% 61–80 years, 18.4%> 80 years, and 8.1% ≤ 40 years.

The total health care costs for all months of 2019 were determined for the study group and comparison group, regardless of the number of months the member was enrolled in the HPC program or in the health plan. The difference between the study group and comparison group was calculated as the annual savings. The annual cost for the comparison group was $147,233 per member and the annual cost for the study group was $122,590 per member, a 12-month savings of $24,643 per member per year (PMPY) (Table 3). The highest annual decrease in costs of $109,702 (51%) was seen for the commercial product and the next highest decrease was for the Medicare product at $12,311 (21%). The Medicaid product showed an increase in annual costs of $28,909 (25%).

The annual savings were again calculated for all product lines combined, the 226 members enrolled in HPC for 1–5 months relative to the comparison group, and for the 170 members enrolled in HPC for 6–12 months relative to the comparison group. For members enrolled in HPC for 1–5

### Table 2. Demographic and Clinical Characteristics for Enrollees and Controls

|                                | Enrollee \((n=396)\) | Control \((n=110)\) | p    |
|--------------------------------|-----------------------|---------------------|------|
| **Age band, years, (%)**       |                       |                     | 0.33 |
| ≤40                            | 31 (8%)               | 8 (7%)              |      |
| 41–60                          | 152 (38%)             | 33 (30%)            |      |
| 61–80                          | 138 (35%)             | 48 (44%)            |      |
| >80                            | 75 (19%)              | 21 (19%)            |      |
| **Gender (%)**                 |                       |                     | 0.67 |
| Female                         | 213 (54%)             | 56 (51%)            |      |
| Male                           | 183 (46%)             | 53 (48%)            |      |
| Missing                        | 0 (0%)                | 1 (1%)              |      |
| **Ethnicity (%)**              |                       |                     | 0.061|
| Caucasian                      | 171 (43%)             | 50 (45%)            |      |
| Hispanic                       | 102 (26%)             | 14 (13%)            |      |
| Asian Pacific Islander         | 29 (7%)               | 14 (13%)            |      |
| African American               | 9 (2%)                | 2 (2%)              |      |
| Armenian                       | 1 (0%)                | 1 (1%)              |      |
| Persian                        | 3 (1%)                | 0 (0%)              |      |
| Arabic                         | 2 (1%)                | 0 (0%)              |      |
| Russian                        | 3 (1%)                | 1 (1%)              |      |
| Missing                        | 76 (19%)              | 28 (25%)            |      |
| **LOB (%)**                    |                       |                     | 0.32 |
| Medicaid                       | 229 (58%)             | 56 (51%)            |      |
| Commercial                     | 83 (21%)              | 30 (27%)            |      |
| Medicare                       | 84 (21%)              | 23 (21%)            |      |
| Missing                        | 0 (0%)                | 1 (1%)              |      |
| **DX category (%)**            |                       |                     | 0.14 |
| Cancer                         | 169 (43%)             | 50 (45%)            |      |
| Congestive heart failure       | 85 (21%)              | 13 (12%)            |      |
| Chronic obstructive pulmonary disease | 37 (9%)         | 13 (12%)            |      |
| Neurological disorders         | 21 (5%)               | 10 (9%)             |      |
| End-stage liver diseases       | 18 (5%)               | 4 (4%)              |      |
| End-stage renal diseases       | 14 (4%)               | 4 (4%)              |      |
| Coronary artery diseases       | 7 (2%)                | 1 (1%)              |      |
| Cerebrovascular accident       | 5 (1%)                | 5 (5%)              |      |
| Lymphoma                       | 2 (1%)                | 1 (1%)              |      |
| Others                         | 38 (10%)              | 8 (7%)              |      |
| Missing                        | 0 (0%)                | 1 (1%)              |      |

No statistical significance when \(p\)-value >0.05.

DX, diagnosis; LOB, line of business.
months, the annual savings were $23,314. For members enrolled in HPC for 6–12 months, the annual savings were $26,409 (Table 3).

The comparison group was enrolled in the plan for a mean of 10.60 months, which is 5.1% longer than the enrolled group who were enrolled in the health plan for a mean time of 10.06 months in 2019.

The mean length of stay (LOS) in the program during 2019 was 3.4 months overall. The median was 2.6 months. The subgroup enrolled for 1–5 months had a mean LOS of 1.8 months during 2019. The subgroup enrolled for 6–12 months had a mean LOS of 8.4 months during 2019.

Of the intervention group, 106 (26.8%) transferred to hospice and 61 (15.4%) died. Of those who died, 22 died at home, 27 died in the hospital, 2 died in skilled or long-term facilities, and 10 are unknown.

Member satisfaction surveys of 58 families after disenrollment revealed that 78% were very satisfied or satisfied, 13% were neutral, 3% were dissatisfied or very dissatisfied, and 5% were not applicable.

Discussion

A previous review of 46 articles evaluating the efficacy of palliative care concluded that palliative care is most frequently less costly relative to comparison groups, and in most cases, the difference in cost was statistically significant. In the current study, the total health care cost decrease of $24,643, compared with a control group, for a calendar year is within the range reported in the literature if the PMPM (per member per month) savings reported in the literature are multiplied with the corresponding LOS. The current methodology is different, in that the total health care cost is for the entire calendar year regardless of the number of months the member was enrolled in the HPC program or with the health plan. Other studies confirm savings from a palliative care program, but generalization of these studies may be limited to their study populations, including factors such as insurance product, age, time to death, or diagnosis. The current study includes all insurance products, all diagnoses, any adult age, and no limitation for time until death.

Summary of multiple studies

- The Medicare population with an average age of 80 years with cancer, COPD, CHF, or dementia showed a decrease of $2,690–$4,258 PMPM, with a cancer diagnosis having the most savings and a dementia diagnosis having the least savings. The mean LOS in the program was 7.14 months.
- The HMO population with a mean age of 73.8 years and a diagnosis of cancer, CHF, or COPD had a decrease in PMPM cost of $95.30 per day with a mean LOS of 196 days.
- The elderly population (83% > 65 years old and 88% in Medicare) with multiple diagnoses showed a decrease of $6,270 PMPM in the last 1 month of life and $3,908 PMPM during the last 6 months of life, but relatively none in the 2-year to 6-month period before death.
- The Medicare study revealed a cost decrease of $620 PMPM with an average LOS of 6.1 months.
- The Medicare study in which the enrollees died, savings of $4,000 PMPM were seen in the last 3 months of life, $1,903 PMPM in the last 6 months of life, and $870 PMPM in the last 12 months of life.
- The Medicare study showed a $3,669 PMPM savings in the last 30 days of life, $1,535 PMPM in the last 90 days of life, and $224 PMPM in the last 180 days of life.
- These studies suggest that palliative care programs in a Medicare population do decrease medical costs, with the savings most prevalent in the last 3 months of life. The total cost increased as time to death decreased.
- The Medicare Advantage population showed a $17,687 savings in the last 3 months of life, compared with a comparison group, and $1,148 PMPM over the 21 months leading up to death.
- A homebound Medicare population with cancer, CHF, COPD, dementia, stroke, or diabetes mellitus showed a difference in savings of $18,250 PMPY.

The literature to date studying palliative care, whether limiting the diagnoses, limiting the population to the elderly or Medicare, or limiting the study period closer to the end of life, does favor a conclusion that palliative care does produce cost savings. The current study supports that there are cost savings in home-based palliative care for an adult population of various ages, multiple insurance products, and any diagnosis, and not necessarily in the last 6–12 months of life. However, the greatest savings were seen for the commercial product, followed by the Medicare product. The Medicaid product did not show savings.

The current study is focused on cost from a payer’s viewpoint in an outpatient setting, not necessarily for rapidly progressive disease at the end of life. The 6% of Medicaid members in dual/full-risk contracts may affect the results slightly since the health plan pays the group fixed rates and therefore does not accrue any financial risk for these members.

Medicare members discharging from palliative care and going to hospice may decrease the palliative savings since the savings from end-of-life care accrue to the Medicare fee-for-service program, not through the palliative care program. The fee-for-service cost for Medicare members after going to hospice is not available in this study. This would be an area for future studies that address this issue. For commercial and

| LOS (months) | Control Member count | Control Cost PMPY | Control Cost PMPY | Enrollee Member count | Enrollee Cost PMPY | Enrollee Cost PMPY | Savings PMPY |
|--------------|----------------------|------------------|------------------|-----------------------|-------------------|-------------------|--------------|
| 1–12         | 110                  | $147,233         | 396              | $122,590              | $123,919          | $26,409           | $23,314      |
| 1–5          | 110                  | $147,233         | 226              | $122,590              | $120,824          | $26,409           | $23,314      |
| 6–12         | 110                  | $147,233         | 170              | $120,824              |                   |                   | $26,409      |

LOS, length of stay; PMPY, per member per year.

Table 3. Cost Savings of the Home Palliative Care Program
Medicaid products, hospice savings do accrue to the health plan and are included in the savings. Studies of Medicare hospice care have confirmed savings for members with poor prognosis cancers in the last year of life,15 with savings being even higher with shorter enrollment periods.16

Unlike what is seen in typical studies, more members in the study group died in the hospital rather than at home. This may be a reflection of a population younger than a more typical palliative care population.

The unusually high annual cost in the control group at $147,233 is driven by the very high annual cost of $323,908 among commercial members in the control group. Outlier cases with very high costs were not excluded.

The current study shows that the decrease in overall health care costs for enrollment of 1–5 months is less than for members enrolled for 6–12 months. However, the increased gross savings may be offset by the increased variable costs for the member being enrolled for a longer period. Therefore, leaving the member in the program for a longer period of time appears to be equally cost-effective.

Factors that may limit the generalizability of this study include smaller numbers of both the study group and control group, relying on the mean without calculation of the median, and failure to eliminate catastrophic cases. Larger studies could confirm whether savings, or lack thereof, would be found in the Medicaid population and whether those savings are affected by a lower unit cost base.

Conclusions

The current study does confirm that cost savings can be seen in a population in which 46% of the members are less than or equal to 60 years of age and in which 58% are Medicaid, 21% are Medicare, and 21% are commercial insurance recipients. The savings appear to be driven by the commercial product and possibly by inclusion of hospice savings for commercial and Medicaid members. This study also indicates that cost-effectiveness is seen in a population with no limitation based on the diagnosis of the enrollee. The study also confirms that an HPC program with a longer LOS is still cost-effective.

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