Hospice Utilization of Medicare Beneficiaries in Hawaii Compared to Other States

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Abstract

The objective is to examine hospice utilization among Medicare beneficiaries in Hawai‘i compared to other states. Data were from the 2014 Medicare Hospice Utilization and Payment Public Use File, which included information on 4,025 hospice providers, more than 1.3 million hospice beneficiaries, and over $15 billion in Medicare payments. Multivariable linear regression models were estimated to compare hospice utilization in Hawai‘i to that of other states. Control variables included age, gender, and type of Medicare coverage. Medicare beneficiaries using hospice in Hawai‘i differed significantly from beneficiaries in other states in several ways. Hawai‘i beneficiaries were more likely to be Asian (57% vs. 1%, $p < .001$) and “other race” (10% vs. 0.1%, $p < .001$), and less likely to be White (28% vs. 84%, $p < .001$). Hawai‘i beneficiaries were also more likely to have Medicare Advantage (55% vs. 30%, $p = .05$). Regarding primary diagnoses, hospice users in Hawai‘i were significantly more likely to have a primary diagnosis of stroke (11% vs. 8%, $p = .03$) and less likely to have respiratory disease (5% vs. 11%, $p = .003$). In addition, hospice users in Hawai‘i were more likely to use services in their homes (74% vs. 52%, $p = .03$). Hawai‘i hospice users were also less likely to die while in hospice (42% vs. 47%, $p = .002$). Characteristics of Medicare beneficiaries in Hawai‘i differ from those in other states, regarding demographic characteristics, type of coverage, primary diagnoses, likelihood of using services in their homes, and death rates. Further research is needed to better understand factors affecting these differences and whether these differences warrant changes in policy or practice.

Keywords: hospice care, Medicare, Hawai‘i, aged, United States, terminal care

The Medicare Hospice Benefit was established in 1983 to provide Medicare Beneficiaries with high-quality care at the end of their lives. Hospice focuses on caring, not curing, by providing palliative and end-of-life care using teams of physicians, nurses, social workers, clerics, volunteers, and therapists. Patients may receive hospice care at their place of residence (i.e., their home, nursing home, or assisted living facility), a hospice inpatient facility, or an acute care hospital. The goal is to provide comfort and a sense of dignity to the terminally ill by relieving physical, emotional, and spiritual suffering; and by supporting their families.

Enrollment in hospice has been found to reduce Medicare costs and improve quality of care for Medicare beneficiaries (Institute of Medicine, 2014; Kelley, Deb, Du, Aldridge Carlson, & Morrison, 2013). In one study, estimated costs were $2,309 less for Medicare hospice users than non-users (Taylor, Ostermann, Van Houtven, Tulsky, & Steinhauser, 2007). Another study found that for patients with metastatic non-small-cell lung cancer, patients receiving early palliative care had less depression, better quality-of-life at the end-of-life and longer survival (by 2.7 months) as compared with patients receiving standard care (Temel et al., 2010). A third study estimated costs for the last year of life were $8,697 less for hospice than for non-hospice users with cancer (Obermeyer et al., 2014).

Hawai‘i has the fastest growing aging society in the United States compared to other states. Between 1990 and 2000, the older adult population in Hawai‘i grew twice as fast as the older adult population nationally, 19% vs. 9%, respectively. During this

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Table 1. *Characteristics of Hospice Users in Hawai'i Compared to the Other States*

	Hawai'i (*N* = 4,928)	Other States (*N* = 1,315,071)	*p*
Mean age, years (*SD*)	84	82.1 (1.3)	.13
Female (%)	58.2%	58.8%	.82
Race/ethnicity			
White (%)	28.2%	84.4%	<.001*
Asian (%)	56.9%	1.2%	<.001*
Black (%)	0.1%	8.1%	.86
Hispanic (%)	4.3%	5.2%	.48
Other race (%)	9.8%	0.1%	<.001*
Coverage (%)			
Medicare Advantage	54.5%	29.8%	.05*
Medicaid	23.8%	25.4%	.78
Primary Diagnosis (%)			
Cancer	31.6	28.8%	.65
Dementia	24.2%	20.0%	.17
Circulatory/heart disease	13.1%	18.2%	.07
Stroke	10.7%	7.8%	.03*
Respiratory	5.2%	10.7%	.003*
Other	24.2%	20.2%	.17

period, the population aged 85 years and older increased by 69% in Hawai'i compared to 38% nationally. Urban Honolulu (the main metropolitan area in Hawai'i) has the highest percentage of people aged 85 years and older of anywhere in the United States, at just over 3.5% (U.S. Census Bureau, 2011). In Hawai'i, Japanese-Americans (34%) have one of the longest life expectancies of any ethnic subgroup in the United States, contributing to a critical need for palliative and hospice care (Executive Office on Aging – Department of Health, 2013).

Despite potential advantages of hospice care, it is often underutilized, particularly in Hawai'i, where the use of acute care at end-of-life has always been high in comparison to other states. Researchers of the Dartmouth Atlas group found that Medicare spending per beneficiary in Hawai'i was 22% less than the national average, yet spending on inpatient care during the last six months of life is 15% higher than the national average and within the last two years is 9% above the national average (Dartmouth Atlas of Health Care, 2014). Moreover, the Center to Advance Palliative Care and National Palliative Care Research Center gave Hawai'i a "B" with a score of 70 out of 100 regarding access to palliative care (Dumanovsky et al., 2016). These findings reinforce the need for improving care at the end-of-life in Hawai'i. The objective of this study was to describe the use of hospice care in Hawai'i compared to other states, with the ultimate goal of informing long-term care services policy, research, and practice.

Method

We conducted a retrospective analysis of the 2014 Medicare Hospice Utilization and Payment Public Use File (Centers for Medicare & Medicaid Services, 2014). The de-identified, publically available dataset, describes hospice utilization, payments, diagnoses, and beneficiary demographics. It also includes information on 4,025 hospice providers, over 1.3 million hospice beneficiaries, and over $15 billion in Medicare payments.

Multivariable linear regression models were estimated to compare Hawai'i beneficiaries to that of those in other states regarding characteristics of hospice users (i.e., age, gender, race and ethnicity, type of Medicare coverage, primary diagnosis), utilization, and outcomes (i.e., likelihood of dying in hospice, total cost). Control variables included age, gender, and type of Medicare coverage. We also examined Hawai'i's rank compared to other states (i.e., 1st through 50th for each measure). We conducted all analyses in STATA V13 (College Station, TX). Because data were in the form of a de-identified public use file, we did not need Institutional Review Board approval for this study.

Results

Hospice users in Hawai'i did not differ significantly from users in other states regarding age and gender. However, Hawai'i hospice users were significantly more likely to be Asian (56.9% vs. 1.2%, *p* >

Table 2. *Hospice Utilization in Hawai‘i Compared to Other States*

	Hawai‘i (*N* = 4,928)	Other States (*N* = 1,315,071)	*p*-value, adjusted*
Service, Mean hours (*SD*)			
Home health	22.0	38.0 (.17)	.60
Skilled nursing	24.0	31.2 (.06)	.98
Service 1 week before death (*M* hours)			
Home health	12.0	22.7 (.09)	.53
Skilled nursing	25.0	46.6 (.13)	.53
Time in hospice (%)			
7 days or less	23.1	26.7	.97
60 days or more	31.0	32.4	.38
180 days or more	11.0	12.6	.26
Site			
Inpatient	0	5.4	NA
Inpatient hospice	2.5	9.3	.35
Long term care	15.3	8.8	.43
Skilled nursing facility	9.3	6.9	.44
Home	74.1	52.0	.03*
Assisted living	1.3	10.7	.98
Other site	0	1.5	NA

Table 3. *Outcomes of Hospice Care in Hawai‘i Compared to Other States*

	Hawai‘i (*N* = 4,928)	Other States (*N* = 1,315,071)	*p*
Percent who died while receiving hospice care	41.7	47.1	.002*
Total payment	$11,474	$11,352 ($1,746)	.46

.001) or “other race” (American Indian, Alaska Native, or Pacific Islander; 9.8% vs. 01%, $p < .001$), and less likely to be white (84.4% vs 28.2%, $p < .001$; Table 1). Hawai‘i hospice users were also significantly more likely to have Medicare Advantage plans (54.5% vs. 29.8%, $p = .05$). There was no difference between Hawai‘i and other states regarding dual coverage under Medicaid.

The three primary diagnoses for hospice users in Hawai‘i and states in the continental United States were cancer (31.6% vs. 28.8%), dementia (24.2% vs. 20.0%), and circulatory heart disease (13.1% vs. 18.2%). These three diagnoses were not significantly different. For primary diagnosis, Hawai‘i hospice users were more likely to have a diagnosis of stroke (10.7% vs. 7.8%, $p = .03$) but less likely to have a diagnosis of respiratory disease (5.2% vs. 10.7%, $p = .003$). The likelihood of other diagnoses was the same between Hawai‘i and other states.

Regarding site of hospice utilization, the only significant difference between Hawai‘i and other states was that Hawai‘i hospice users were more likely to use hospice in their own home (74.1% vs. 52.0%, $p = .03$; Table 2). Service use, overall and within the last week before death did not differ between Hawai‘i and other states. There was, however, a significant difference in the percent of hospice patients dying in hospice, with 41.7% of Hawai‘i hospice users dying compared to 47.1% from other states (Table 3).

When examining rankings compared to other U.S. states, Hawai‘i ranked 1st regarding hospice patients with a primary diagnosis of stroke and hospice patients being of Asian descent (Table 4). Hawai‘i ranked 2nd for being “other race” and being enrolled in Medicare Advantage plans. Hawai‘i ranked 3rd in having a primary diagnosis of dementia or “other” and in receiving hospice services at home.

In contrast, Hawai‘i ranked 50th regarding being white, having cardiovascular or respiratory disease as a primary diagnosis, and in receiving hospice services at an assisted living facility. Moreover, Hawai‘i ranked 49th regarding patients receiving hospice services in an inpatient setting (Table 4).

Discussion

In this study of Medicare beneficiary use of hospice in 2014, we found that Hawai‘i hospice users

Table 4. *Rank of Hawai‘i Relative to Other States in Regard to Characteristics and Utilization*

Rank	Variable(s)
# 1	• Asian
	• Stroke
# 2	• Other race
	• Medicare Advantage
# 3	• Dementia
	• Other diagnosis
	• Site: At home
# 6	• Age
# 10	• Hispanic
	• Medicaid
# 11	• Site: Skilled Nursing Facility
# 13	• Cancer
# 15	• Total payment
# 26	• >60 days in hospice
# 28	• >180 days in hospice
# 31	• Female
# 34	• Social service hours
# 36	• Death in hospice
	• Site: Long term care facility
# 41	• Hispanic
# 43	• Skilled nursing hours
	• <7 days in hospice
	• Site: Inpatient hospice
# 44	• Home health hours
# 46	• Home health hours before death
# 47	• Skilled nursing hours before death
# 49	• Site: Inpatient facility
# 50	• White
	• Circulatory/ heart disease
	• Respiratory
	• Site: Assisted living/other

differed from users in other states regarding demographic characteristics, primary diagnosis, site of hospice utilization, and the likelihood of dying while in hospice. Demographic differences are not surprising as they reflect the ethnically diverse population of Hawai‘I, where Asian/Pacific Islanders (API) ethnic subgroups (e.g., native Hawaiian, Samoan, Filipino, Japanese) comprise over two-thirds of the state's population (U.S. Census Bureau, 2016).

One of the most striking findings was that Hawai‘i hospice users were the most likely of users in any U.S. state to have stroke as a primary diagnosis and least likely to have respiratory disease as a primary diagnosis for hospice use. According to 2015 data from the Centers for Disease Control and Prevention (2015), Hawai‘i ranked 48th in the rate of death due to heart disease and 21st in death due to stroke. However, despite being 21st in death due to stroke, Hawai‘i was 1st in percent of hospice patients with stroke as a primary diagnosis. This suggests that differences in primary diagnoses for hospice use are not purely related to the prevalence of disease, but other factors may be related to race/ethnicity, age, or physician referral of patients to hospice care with a history of stroke.

Our findings also suggest that Hawai‘i hospice patients are less likely than patients in other states to die while in hospice. The primary care physician and the hospice medical director will need to certify that a patient is terminally ill with less than six months to live, and the patient and family will need to agree to receive palliative, but not curative, care to continue the hospice benefit under Medicare. Patients may change their mind and wish to receive curative services, deciding to disenroll from hospice. Hence, there are many reasons why patients may be discharged from hospice without dying.

Hospice utilization in 2014 for Medicare beneficiaries in Hawai‘i was 45.7% compared to a national average of 52.0%. The mean length of stay in hospice, one of the primary indicators used for determining hospice usage, was 60 days in the state of Hawai‘i compared with 71 days nationally. Ngo-Metzger, August, Srinivasan, Liao, and Meyskens (2008) conducted a study on APIs in hospice care. They found 20% of the total sample participated in hospice. Japanese Americans had a shorter median length of stay (21 days), and Filipino Americans had a longer median length of stay (32 days) than white patients (26 days). Overall, approximately 20% of patients enrolled within seven days of death, and only 6% had hospice stays that were longer than two months, with no significant differences across racial or ethnic groups. A consistent finding is that in every ethnic subgroup studied, APIs were less likely than whites to enroll in hospice. Further research is needed to understand these differences and eliminate potential barriers to hospice care.

Our findings also suggest that Hawai‘i hospice patients are more likely to receive hospice services at home. This suggests that family caregiving in Hawai‘i might be higher than in other places. A study by the American Association of Retired Persons found that family caregivers in Hawai‘i provided 144 million hours of free care (valued at $2.1 billion) to their parents, spouses, partners, and other family members (Reinhard, Feinberg, Choula, & Houser, 2015).

For APIs in Hawaii, it is important to address reasons for placement or non-placement in inpatient hospice, skilled nursing facility, long-term care, or assisted living. This is important to address because of the cultural value of filial piety and the expectation of caring for their loved ones at home rather than in a nursing home (Browne, Braun, Mokuau, Ka‘opua, & Higuchi, 2011). Cultural expectations and obligations related to caregiving vary by race and gender (Dilworth-Anderson et al., 2005).

For example, race/ethnicity, culture, acculturation, and socioeconomic status may influence caregiving preference because patients and families attach a different meaning to care and may select different resources based on caregiving preference and meaning to care (Bookman & Kimbrell, 2011).

Family caregivers play a critical role in caring for the aging patient at end-of-life in Hawaiʻi (Kataoka-Yahiro, Yancura, Page, & Inouye, 2011). In Hawaiʻi, an estimated 21% of adults are informal caregivers providing regular care to an older adult. Over half (57%) of adult caregivers were female, about two-thirds (65%) were employed, and 75% were under the age of 60 (Hawaiʻi Department of Health, Hawaiʻi Health Data Warehouse Behavioral Risk Factor Surveillance System, 2000).

There are a limited number of U.S. studies on palliative and end-of-life care with API family caregivers (Kataoka-Yahiro, McFarlane, Kealoha, & Sy, 2016). Caring for the family member at the end-of-life has shifted from the hospital to the home. As a result, there are increased demands placed on the caregivers. As palliative care is shifting from the hospital to the community and the home, there is a need for more research focused on understanding informal family caregivers' knowledge and information needs (Docherty et al., 2008). Providing cross-cultural and culturally appropriate information on hospice and end-of-life care will help health professionals enrich communication and provide anticipatory guidance and preparedness for Hawaiʻi's family caregivers regarding end-of-life care (Hebert, Dang, & Schulz, 2006). Providing cross-cultural strategies to support, inform, and prepare family caregivers will lead to positive consequences and outcomes.

There are several limitations to this study. First, we used a retrospective dataset aggregated at the state level, which limited our ability to examine individual-level differences between states. Second, the Medicare dataset includes only a limited number of factors related to hospice use; we do not have any information on barriers or facilitators to hospice use. Third, as we were examining the difference in hospice use between Hawaiʻi and other states, there may be confounding factors not measured in this study that could affect hospice use.

Conclusions

For many people, an end-stage condition can significantly reduce functional status and quality-of-life. Hospice is designed to offer support to patients and their families at end-of-life and take into account patient wishes and values. Hawaiʻi has one of the highest rates of inpatient acute care utilization within the last six months of life of any state. Findings from this study are useful in that they highlight areas in which there are significant differences in hospice use between Hawaiʻi and other states. Hawaiʻi has the highest percentage of hospice patients with a primary diagnosis of stroke and the lowest for respiratory disease. Hawaiʻi also has a higher percentage of hospice patients receiving services at home. This raises questions about a potentially higher caregiver burden for families and friends in Hawaiʻi and access to other sites for hospice care. Further research is needed to better understand factors affecting these differences and whether they warrant changes in policy or practice.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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