Research Brief
October 1, 2011
Issue 2

Gender Differences in Hospice Covered Days in Medicare

By Sergio I. Prada, Ph.D
sprada@impaqint.com

Medicare beneficiaries entitled to hospital insurance (Part A), who have terminal illnesses, and have a life expectancy of six months or less have the option of electing hospice benefits in lieu of standard Medicare coverage, for treatment and management of their terminal condition.

The Medicare hospice program has been growing steadily in beneficiaries served and days covered, by 11.2% and 12.5%, respectively, over the last 15 years.[1] In 2008, as shown in Table 1, over 1 million Medicare Fee-for-Service (FFS) beneficiaries received hospice care according to CMS' data. On average, for the same year, these beneficiaries received 71 covered days of care.

Table 1: Persons Served, Covered Days of Hospice Care, and Covered Days of Hospice Care per Person in 2008

Category	Persons served	Covered days of care	Covered days of care per person served
By Gender			
Male	421,942	24,888,254	60
Female	632,780	49,128,606	78
By Age			
Under 65	52,803	3,588,058	69
65-79	313,400	18,670,961	60
80-84	203,001	14,004,311	70
85 & older	485,518	37,753,530	78
Total	1,054,722	74,016,860	71

Source: CMS, Health Care Financing Review/2009 Statistical Supplement

In 2008, the difference by gender in covered days per person was approximately 18 days: 60 days for male vs. 78 for female users.

[1] Author's calculation based on Table 8.1 of CMS' Health Care Financing Review/2009 Statistical Supplement.

This Research Brief presents data from the 2008 Basic Stand Alone (BSA) Hospice Beneficiary Public Use File (PUF). These analyses are descriptive in nature, and exploit the multidimensionality of the 2008 BSA Hospice Beneficiary PUF. Until its release, cross tabulations of two or more variables (e.g., age and gender) were not possible with publicly available data.

This brief does not discuss differences in program payments. Medicare pays hospice agencies a daily rate for each day a beneficiary is in hospice care. Thus, gender differences in program payment would be largely explained by differences in number of days covered. In addition, the daily hospice payment rates are adjusted for geographic factors, such as differences in wage rates across markets.

Findings

The 2008 BSA Hospice PUF includes a categorical variable that groups days into 5 categories (1-7, 8-30, 31-90, 91-180, and 181 or more days). We start by looking at gender differences in the distribution of the FFS population by this variable in 2008. Table 2 shows that there is a statistically significant relationship between gender and age categories (see Pearson Chi-square test result in Table 2).

Table 2: Distribution Of Beneficiaries By Gender And Categories Of Hospice Covered Days

Age\Days	1-7	8-30	31-90	91-180	181 or more	Total
Females	25.2%	25.6%	20.8%	12.7%	15.7%	100%
Males	31.8%	28.3%	18.9%	10.5%	10.5%	100%
Diff. (pp)	-6.6*	-2.7*	1.9*	2.2*	5.2*	
Pearson Chi-square: 532.02, Pr = 0.000						

Source: Author's calculation.
Difference is calculated as (% Female) – (% Male).
pp= percentage points.
* Difference is statistically significant at 1%.

Two additional conclusions can be made from Table 2. First, the percentage of beneficiaries decreases as the total number of covered days increases for both males and females. Second, women are more likely to have longer

periods of covered hospice care than men. As shown in Table 2, the proportion of females is lower than the proportion of males for shorter stays (with less than 30 days) but higher for longer stays (with more than 31 days).

In addition to number of covered days, the 2008 BSA Hospice PUF includes a terminal diagnosis variable that provides the most common five diagnosis codes and a residual category for all other diagnoses. Table 3 shows the distribution of FFS beneficiaries in 2008 by gender and terminal diagnosis. Again, we find a statistically significant correlation between gender and diagnosis codes (see Pearson Chi-square test result in Table 3). The results also show that females diagnosed with non-Alzheimer's dementia, debility and other non-cancer are overrepresented compared to males.

Table 3: Distribution Of Beneficiaries By Gender And Terminal Diagnosis

Terminal Diagnoses	Females	Males	Difference
Non-Alzheimer's Dementia	11.8%	6.4%	5.4*
Debility, unspecified	10.7%	7.5%	3.2*
Lung Cancer	7.3%	11.8%	-4.5*
Congestive Heart Failure	8.3%	7.8%	0.4
Non-Infectious Respiratory Disease	6.3%	6.9%	-0.6
Other Cancer Dx	19.2%	26.3%	-7.1*
Other Non-Cancer Dx	36.4%	33.3%	3.1*
Total	100%	100%	
Pearson Chi-square: 802.44, Pr = 0.000			

Dx: Diagnoses
Difference is calculated as (% Female) – (% Male).
Unit of difference is percentage points.
* Difference is statistically significant at 1%.

These aggregate results (Tables 2 and 3) may be explained by differences in the age distribution. To analyze this possibility, we explore: 1) gender differences in the proportion of beneficiaries by age and day categories (Tables 4 and 5) and 2) gender differences by age and terminal diagnosis (Table 6).

Table 4 shows that gender differences exist in some cases (i.e., age and day category combinations), which is consistent with the finding in Table 2. However, some differences are no longer statistically significant; this is generally true for beneficiaries in age categories under 65 and 65-69; and, for those in days categories 8-30 and 31-90.

Table 4: Gender Differences in the Percentage of Beneficiaries Receiving Hospice Care by Age and Category of Days (percentage points)

	1-7	8-30	31-90	91-180	181 or more
Under 65	-4.5	-3.8	5.6*	2.2	0.5
65-69	-2.6	-2.3	0.9	1.7	2.4
70-74	-5.6*	0.3	1.5	0.7	3.1*
75-79	-5.9*	-0.2	1.9	1.1	3.1*
80-84	-6.8*	-1.7	1.9	2.0*	4.6*
85-89	-6.7*	-2.2	2.0	1.9*	4.9*
90 & older	-7.6*	-3.8*	1.2	3.5*	6.7*
Total	-6.6*	-2.7*	1.9*	2.2*	5.2*

Source: Author's calculation.
Difference is calculated as (% Female) – (% Male).
Unit of difference is percentage points.
* Difference is statistically significant at 1%.

As previously noted, beneficiaries enter hospice with a life expectancy of six months or less. They can elect to enter the program at any time during the year. They may also choose to leave at any time. The gender differences observed in Tables 2-4 do not control for these factors. However, the 2008 BSA Hospice Beneficiary PUF includes an indicator for whether the hospice beneficiary was deceased at discharge. We focus our analyses on those who were deceased at discharge as they represent a more homogenous group than those not deceased at discharge (i.e., hospice beneficiaries who are still patients at the end of the reference year).

Table 5 shows gender differences by age and day categories for beneficiaries who were deceased at discharge in 2008. We find that: 1) females are less likely to have shorter stays (i.e., 7 days or less) than males at every age category, except for under 65 and 65-69; 2) females are more likely to have longer stays (i.e., 181 or more days) than males in every age category, except for under 65, 65-69, and 75-79; and 3) there are few statistically significant differences for beneficiaries receiving more than 7 days but less than 181 days.

Table 5: Gender Differences in the Percentage of Deceased Beneficiaries Receiving Hospice Care by Age and Category of Days (percentage points)

	1-7	8-30	31-90	91-180	181 or more
Under 65	-6.1	-4.6	7.4*	3.9*	-0.7
65-69	-0.8	-1.1	-0.8	1.2	1.5
70-74	-4.5*	2.3	0.5	0.2	1.5*
75-79	-4.3*	1.6	1.5	0.5	0.7
80-84	-5.6*	0.7	2.5*	0.7	1.6*
85-89	-5.9*	0.0	2.1	1.7	2.1*
90 & older	-5.5*	-2.4	1.8	3.8*	2.3*
Total	-5.2*	-0.6	1.9*	1.9*	2.0*

Source: Author's calculation.
Difference is calculated as (% Female) – (% Male).
Unit of difference is percentage points.
* Difference is statistically significant at 1%.

The differences in number of covered days for those who were deceased at discharge in 2008 may be explained by their terminal diagnoses. First, we investigate gender differences by diagnoses. Table 6 shows the percentage differences in the proportion of males and females in each day category by terminal diagnosis for beneficiaries who were deceased at discharge in 2008.

Table 6: Gender Differences in the Percentage of Deceased Beneficiaries Receiving Hospice Care by Diagnosis and Category of Days (percentage points)

	1-7	8-30	31-90	91-180	181 or more
NAD	-9.5*	0.6	4.9*	1.3	2.6
DEB	-2.2	-2.3	2.6	-0.2	2.1
LC	-4.4*	-1.2	2.8	1.2	1.6*
CHF	-1.0	-3.9	2.2	0.7	1.9
NIRD	-6.3*	-2.0	2.7	5.7*	-0.2
OC	-4.0*	-0.4	2.4*	1.7*	0.3
ONC	-8.4*	2.1	1.8*	2.0*	2.5*
Total	5.2*	0.6	1.9*	1.9*	2.0*

Source: Author's calculation.
Difference is calculated as (% Female) – (% Male).
Unit of difference is percentage points.
* Difference is statistically significant at 1%.
NAD: Non-Alzheimer's Dementia; DEB: Debility, unspecified;
LC: Lung Cancer; CHF: Congestive Heart Failure;
NIRD: Non-Infectious Respiratory Disease;
OC: Other Diagnosis Cancer; ONC: Other Diagnosis No Cancer

The results show that females are less likely to be in the 1-7 day category than males for every diagnosis with the exception of debility and congestive heart failure. Similarly, females are less likely to be in the 181 or more days category than males with the exception of lung cancer and other non-cancer terminal diagnosis. For beneficiaries receiving more than 7 days but less than 181 days, there are some observed statistically significant differences but a clear pattern does not emerge.

For completeness, we investigate whether similar conclusions can be reached for those who were not deceased at discharge in 2008. It is worth noting that information on some of these beneficiaries may be truncated, either because they are still patients at the end of 2008, or because they entered hospice before 2008. As Table 7 shows, no clear pattern emerges.

Table 7: Gender Differences in the Percentage of Not Deceased at Discharge Beneficiaries Receiving Hospice Care by Diagnosis and Category of Days (percentage points)

	1-7	8-30	31-90	91-180	181 or more
NAD	-0.3	-2.0	1.4	-0.9	1.8
DEB	-1.6	0.1	-1.6	-0.7	3.9
LC	-4.8	-2.3	1.5	-1.7	7.3*
CHF	-3.3	-5.0	3.4	0.1	4.8
NIRD	-6.2*	-1.4	5.3	4.7	-2.3
OC	-2.2	-2.4	4.1	-0.3	0.7
ONC	-3.9*	-4.2*	0.5	-0.6	8.2*
Total	3.8*	4.4*	1.1	0.5	6.6*

Source: Author's calculation.
Difference is calculated as (% Female) – (% Male).
Unit of difference is percentage points.
* Difference is statistically significant at 1%.
NAD: Non-Alzheimer's Dementia; DEB: Debility, unspecified;
LC: Lung Cancer; CHF: Congestive Heart Failure;
NIRD: Non-Infectious Respiratory Disease;
OC: Other Diagnosis Cancer; ONC: Other Diagnosis No Cancer

Lastly, we explore whether there are gender differences in the probability of being deceased at discharge after controlling for age and diagnosis by estimating a logistic regression model. This is because shorter hospice care, on average, for males compared to females might be an indication of a higher mortality rate for males. The dependent variable in this model is whether a hospice beneficiary was deceased at discharge and the independent variables are an indicator for gender (i.e., male=1 and female=0) and dummies for each age category and diagnosis. Estimation results in Table 8 show that the odds of being deceased at discharge are 1.27 times larger for males than females.

Table 8: Logistic regression on the probability of being deceased at discharge

	Odds Ratio	Std. Error	z	P>|z|
Male	1.27	0.027	11.56	0.000
Debility, Unspecified	0.92	0.039	-1.85	0.064
Lung Cancer	2.74	0.141	19.62	0.000
Congestive Heart Failure	1.11	0.050	2.35	0.019
Non-Inf. Resp. Disease	0.97	0.046	-0.64	0.523
Other Cancer	2.28	0.090	20.82	0.000
Other No Cancer	1.23	0.042	5.95	0.000
Age 65-69	1.44	0.089	5.86	0.000
Age 70-74	1.38	0.079	5.68	0.000
Age 75-79	1.29	0.068	4.83	0.000
Age 80-84	1.25	0.063	4.32	0.000
Age 85-89	1.34	0.068	5.73	0.000
90 & older	1.34	0.068	5.75	0.000
Observations	50281			

Source: Author's calculation

Conclusions

Analysis of the 2008 BSA Hospice Beneficiary PUF leads to interesting findings about gender differences in hospice utilization.

First, females that elect hospice coverage are more likely to have more covered days than males (Table 2). Second, males diagnosed with cancer are overrepresented within the FFS beneficiaries that elected Hospice coverage (Table 3). Third, at every age category, except under 65 and 65-69, males are overrepresented in the 1-7 days category (Table 4). At the same time, at every age category, except under 65 and 65-69, females are overrepresented in the 181 or more days category (Table 4). Such differences remain after restricting analyses to those deceased at discharge (Table 5). Fourth, utilization of hospice is also significantly higher for females by terminal diagnosis for both beneficiaries who were deceased at discharge (Table 6) and beneficiaries who were not deceased at discharge (Table 7). Fifth, we found that males are more likely to be deceased at discharge than females controlling for age and diagnosis (Table 8).

These findings raise the following questions:

- Do elderly females benefit more from hospice care than elderly males?
- Do elderly females surrender aggressive treatment for terminal illness earlier than elderly males? If so, Why?
- Do socio-economic status, marital status, and race play a role?

The answers to these questions are not available in the 2008 BSA Hospice Beneficiary PUF.

Gender differences in hospice care use have been documented previously. A recent review of the literature found that non-clinical factors, including being unmarried, without a home caretaker, and socioeconomically disadvantaged, are associated with less access to community palliative care services [1]. The authors suggest a lack in the literature in terms of identifying the reasons for such variation in access, in particular whether the variability is explained primarily by clinical need or other factors ([1], page 884]). Further research is needed in this area.

References

[1] Catherine Walshe, Chris Todd, Ann Caress, and Carolyn Chew-Graham (2009). "Patterns of Access to Community Palliative Care Services: A Literature Review", *Journal of Pain and Symptom Management* 37 (5): 884-912.

Suggested Citation

Prada, Sergio. Gender Differences in Medicare Hospice Covered days in 2008. Research Brief #2. IMPAQ International LLC, October 2011.

Appendix

About BSA Hospice Beneficiary PUFs

The 2008 Basic Stand Alone (BSA) Hospice Beneficiary Public Use File (PUF) is one of eight (8) BSA Medicare Claims PUFs available at www.cms.gov/BSAPUFS. Each BSA PUF is:

- based on a simple random 5% sample of Medicare beneficiaries in 2008;
- disjoint from all the other BSA PUFs and the existing 5% CMS research sample (i.e., no overlap in terms of the beneficiaries); and
- de-identified to protect the privacy and confidentiality of the Medicare beneficiaries (and providers in some BSA PUFs).

Data Source

The estimates in this brief are based upon data from the 2008 BSA Hospice Beneficiary PUF. The 2008 BSA Hospice Beneficiary PUF summarizes administrative (claims) data at the beneficiary level. Refer to the general documentation for the 2008 BSA Hospice Beneficiary PUF for more information.

Unit of analysis

The unit of analysis is the beneficiary of the Medicare Hospice Program. This means that each record in the PUF summarizes all the information for that beneficiary in reference year 2008. For instance, if a beneficiary has more than one admission, all admissions are included in that record.

Methods

The variable Terminal Diagnoses in the 2008 BSA Hospice PUF was created based on the analysis and classification of ICD-9-CM codes conducted by CMS on Hospice care "Medicare Hospice Data Trends: 1998-2008 Tables" available at http://www.cms.gov/center/hospice.asp.

Statistical analyses were conducted using Stata 10.1.

Contact Information

Columbia, MD Location:
10420 Little Patuxent Parkway, Suite 300
Columbia, MD 21044
Telephone: 443.367.0477

Washington, DC Location:
1425 K Street, NW, Suite 650
Washington, DC 20005
Telephone: 202.289.0004

Joint Acknowledgment/Disclosure Statement

We thank Cindy Riegler, Christine Cox, and Chris Haffer from the CMS Center for Strategic Planning for their thorough review of and comments on this research brief.

Disclosures: The research in this article was supported by the Centers for Medicare and Medicaid Services under contract number 500-2006-00007I/#T0004 with IMPAQ International.
Disclaimers: The views expressed in this article are those of the author and do not necessarily reflect the views of the U.S. Department of Health and Human Services, the Centers for Medicare and Medicaid Services, or IMPAQ International.