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The Effects of the Balanced Budget Act of 1997 on Home Health and Hospice in Older Adult Cancer Patients

Meredith L. Kilgore, PhD

University of Alabama at Birmingham (UAB) Dept of Health Care Organization and Policy Lister Hill Center for Health Policy Center for Aging

David C. Grabowski, PhD

Harvard Medical School Department of Health Care Policy

Michael A. Morrisey, PhD

University of Alabama at Birmingham (UAB) Dept of Health Care Organization and Policy Lister Hill Center for Health Policy Center for Aging

Christine S. Ritchie, MD

University of Alabama at Birmingham (UAB) Department of Medicine Division of Gerontology, Geriatrics, and Palliative Care Center for Palliative Care Birmingham/Atlanta VA Geriatric Research, Education, & Clinical Center

Huifeng Yun, MS

Department of health Care Organization and Policy

Julie L. Locher, PhD

University of Alabama at Birmingham (UAB) Department of Health Care Organization and Policy Department of Medicine Division of Gerontology, Geriatrics, and Palliative Care Center for Palliative Care Lister Hill Center for Health Policy Center for Aging

Abstract

Background—Home health and hospice services can constitute important elements in the continuum of care for older adults diagnosed with cancer. The Balanced Budget Act of 1997 (BBA) included provisions affecting those services.

Objectives—The first aim of this study is to assess the effect of the BBA of 1997 on home health and hospice service utilization in older cancer patients. The second aim is to estimate the effect of the BBA of 1997 on costs associated specifically with home health and hospice services and on total costs of care. The final aim is evaluate the effect of the BBA of 1997 on mortality in these patients.

Research Design—Longitudinal analysis using the Surveillance, Epidemiology and End Results-Medicare Database, covering a service area that includes 26% of the U.S. population.

Participants—Community-dwelling Medicare beneficiaries aged 65+.

Measures—Utilization rates of home health and hospice services; costs associated with those services, and total costs of care; and mortality.

Results—Home health utilization rates dropped substantially and hospice utilization rates increased following the BBA. Medicare costs for home health services declined as did total Medicare costs, but hospice costs increased. There was no discernable effect on mortality rates.

Conclusions—The BBA was successful in containing the costs of home health services and resulted in savings in overall costs of care for older cancer patients. Reduction in utilization of home health services did not appear to negatively affect outcomes. The BBA may have contributed to the trend of increasing use of hospice care.

Keywords

Home Health; Hospice; Balanced Budget Act of 1997; Cost Analysis

Introduction

Home health and hospice services can constitute important elements in the continuum of care for older adults diagnosed with cancer. Following a cancer diagnosis, approximately 29% of older patients access home health care and 11% access hospice care, and in the final six months of life, 24% of cancer patients access home health care and 30% access hospice services.¹ Whether these service utilization rates are appropriate is not known, specifically with regard to outcomes and costs.

The Balanced Budget Act (BBA) of 1997 contained provisions to constrain an explosive growth in the utilization and costs of home health services, and, to a lesser extent, provisions to promote the use of hospice care.^{2,3,4} The BBA tightened eligibility requirements for the receipt of home health services and mandated a transition from a fee-for-service to a prospective payment system (PPS). At the same time, eligibility requirements for hospice care were somewhat relaxed--patients receiving hospice services were indemnified against liability for denial of coverage decisions, the coverage period for physician certification was extended, and provisions were made for subsequent recertifications as needed. After the BBA was enacted home health utilization rates and expenditures declined substantially,^{5,6,7} and at the same time hospice utilization rates and expenditures rose.⁸ Whether or not these policy changes resulted in cost savings or in better (or worse) outcomes is not known, and the extent to which changes in the rates of utilization and costs for home health and hospice are related is also not known.

Thus, the first objective of this paper is to examine utilization of home health and hospice services before, during, and after implementation of the BBA. A second aim is to examine costs of care for home health and hospice services and the total costs of care relative to dates of cancer diagnosis and death, where applicable. Again, we estimate costs of care before, during, and after implementation of the BBA. These first two aims allow us to determine whether restrictions on home health services led to substitution of other services—namely, hospice care—and whether the BBA generated savings specific to home health and overall costs of care. A final aim is to assess the effects of the BBA on survival rates for older cancer patients. This paper is the first to report on effects of the BBA after the PPS was fully in place.

Methods

Sample

This paper uses the SEER-Medicare Database, a linkage of the Surveillance, Epidemiology and End Results (SEER) Program of the National Cancer Institute and the Medicare claims data for covered health services for beneficiaries from the point of eligibility to death.^{9,10} The SEER program is an epidemiological surveillance system of population-based tumor registries designed to track cancer incidence and survival. Data collected include demographics (age, sex, and race), cancer-specific data (including date of diagnosis and site and stage of cancer), follow-up vital status, and, if relevant, cause of death. The Medicare database includes claims data, including charges and reimbursements for Medicare-covered services (including home health and hospice services), and codes to identify diagnosis and procedures.

The SEER data used in this paper cover service areas that include approximately 14% of the US population in 1995, and additional areas added in 2000 covered 26% of the United States population. The SEER data are highly valid and the program's standard for completeness is

98%.¹⁰ Medicare provides health insurance for approximately 96% of the population aged 65 and older, and 93.1% of older adults are covered by Medicare Parts A and B.¹¹ Compared with the entire US population aged 65 and older, the SEER-Medicare data are similar in terms of age and sex distribution, but are less likely to be white, to be living in poverty or to experience cancer mortality and more likely to be enrolled in an HMO.¹⁰

Medicare beneficiaries at least 65 years of age, diagnosed with bladder, breast, colorectal, lung, lymphoma, melanoma, pancreatic, prostate, renal, or uterine cancer, covered by Medicare Parts A and B, and not enrolled in an HMO were included in the analyses. These cancer sites were chosen because they have high incidence rates, affecting large numbers of Medicare beneficiaries, and represent a broad range of diseases in terms of prognoses, overall health services utilization, and in utilization rates for home health and hospice care.¹

Where individuals had multiple cancer diagnoses, we based our analysis on the most recently diagnosed cancer site. Additionally, because this paper reports only on community-dwelling persons who would be eligible to receive either home health or hospice services, persons who were residents in a skilled or intermediate nursing facility were excluded from the analyses.¹²

This research received approval from the University of Alabama at Birmingham Institutional Review Board.

Analysis

Data management and database construction were carried out using SAS v9.1.3 for Windows (SAS Institute Inc., Cary, NC); and statistical analyses were carried out using Stata v9 statistical software (Stata Corp., College Station, TX). Descriptive statistics were completed first describing the sample distributions for patient demographics, cancer-specific data, and follow-up vital status.

Following the methods used by Brown et al., a longitudinal database was constructed for analyses treating each patient month relative to the date of diagnosis as the unit of observation.^{13,14,15} Additionally, we defined phases of illness as follows: baseline (12 months prior to the diagnosis); initial/acute care (the month of diagnosis and the following six months); continuing care (following the sixth month after diagnosis up to end of observations or 12 months prior to death), and terminal (12 months prior to death). Patients dying within 12 months of the diagnosis are considered to have all their care in the terminal phase.

To address our first specific aim, we examined utilization of home health and hospice services before, during, and after implementation of the BBA by charting the proportion of cancer patients accessing home health and hospice services for each month prior to and following the month of diagnosis and, for decedents, for each of the twelve months prior to death. For ease of presentation, representative years were selected for each period of the BBA (i.e., 1996: Pre-BBA; 1998: Interim Payment System; 2000: PPS Phase-In; and 2002: PPS Fully Implemented). Table 1 provides a timeline detailing the major changes under the BBA related to home health and hospice care.

To address our second specific aim, we examined costs of care, including specifically home health costs, hospice costs, and total costs for all health service utilization. We used total payments for Medicare covered services (i.e., CMS payments, co-payments and deductibles from beneficiaries, and payments from other primary payers) as proxies for the costs of care. Payments were converted into constant 2006 dollars using the Consumer Price Index. Payments for home health and hospice care and for all health services were aggregated according to phase of illness as described above. Costs during the continuing care phase were reported as costs

per month, because this period varies according to when patients were diagnosed and when and whether they died prior to the end of our observation period.

We then constructed multivariable regression models to examine the effects of the BBA on the costs of home health and hospice services and total costs of care by phase of illness controlling for patient demographics and cancer characteristics. The primary variables of interest are indicators for each of the years, relative to the BBA, under observation. Control variables include age (and age-squared), gender, race, marital status, interactions between gender and race or marital status, cancer site and stage, and SEER registry series.

Finally, to address the third specific aim, we examined the effects of the BBA on unadjusted and adjusted one-year survival rates for older cancer patients. We used logistic regressions to estimate expected one-year survival probabilities based upon year of diagnosis relative to the BBA, again controlling for the same patient demographic and cancer characteristics used in our cost estimation analyses.

Results

Patient Characteristics

Table 2 describes the population of patients diagnosed with cancer between 1995 and 2002, with data on the full sample and the subsample of patients who died between the date of their cancer diagnosis and the end of 2003. Mean age of the full sample was 72; 53% were male; and most (83.5%) were white. The most common sites of cancer were prostate, lung, breast, and colon. Overall one-year survival for the full sample was 76.3%.

Home Health and Hospice Utilization

Figure 1 illustrates the relationship between home health and hospice utilization relative to the months surrounding the cancer diagnosis (column groups) and the calendar years of the diagnosis (columns within groups). Patients diagnosed in 1996 can be considered as having initial cancer treatment prior to passage of the BBA; those diagnosed in 1998 received care under the interim payment system; those diagnosed in 2000 received care during the transition from the interim payment system to prospective payment system; and those diagnosed in 2002 received care while the prospective payment system was fully in effect.

In all periods, both home health and hospice utilization increased in the first months following diagnosis, then declined thereafter, but did not return to baseline (i.e., prior to diagnosis). However, home health utilization rates dropped substantially following passage and implementation of the BBA. This pattern was observed for each month following diagnosis. Conversely, hospice utilization rates increased substantially for cancer cases diagnosed subsequent to the BBA compared with 1996. Again, this pattern was observed for each month following diagnosis.

Figure 2 shows similar patterns relative to the date of death for decedents. As patients approach the month of death, they became more likely to access both home health and hospice services. This is true in all cases except for home health utilization that occurs in the actual month of death. However, those who died in 1996 were more likely to access home health services and less likely to access hospice services than those who died in subsequent years.

Costs

Table 3 illustrates trends in costs for home health and hospice services and total costs of care for all covered services over time and by phase of illness. For each phase of illness, both average home health payments and average total payments fell subsequent to the passage and initial

implementation of the BBA. However, for the initial or acute care phase, after reaching a nadir in 1999 (\$282 for home care and \$9,006 overall), both home health and total average payments began to rise, with total payments in 2002 (\$10,730) actually exceeding those in 1996 (\$10,694).

We examined costs of hospice services for the terminal phase of illness only. Home health and total average payments decreased after the BBA for the terminal phase of illness; at the same time hospice payments increased by seventy percent. It is worth noting that the decrease in home health payments produced by the BBA was less than the increase in payments for hospice services, but this did not translate to an increase in total payments for all health services (see discussion below).

Consistent with the unadjusted trends, home health payments, adjusted for patient demographics and cancer characteristics, declined subsequent to the BBA, regardless of phase of disease. These declines occurred early on and remained low. Payments for hospice services in the last 12 months of life increased over the same time period. Table 4 shows these findings. The dependent variables are payments for home health care, hospice (for terminal phase only), and total payments for all covered services. Compared to 1996, controlling for patient and cancer characteristics, home health payments in 2002 were lower for baseline by \$245 ($p < 0.0001$), by \$243 ($p < 0.0001$) in the initial/acute care period, and \$1,131 ($p < 0.0001$) in the terminal phase. In contrast, hospice payments rose by \$642 ($p < 0.0001$) between 1996 and 2002 for cancer patients in the terminal phase. Total payments were lower in 2002 compared with 1996 for each phase of disease. However, total payments, adjusted for patient and cancer characteristics were lower in the intervening years for the baseline and initial care periods. For the terminal care phase, total payments in the year prior to death declined throughout, although at a decelerating rate; declining by \$8,358 ($p < 0.0001$) between 1996 and 2002.

Survival

Figure 3 compares unadjusted and adjusted rates of 1-year survival over time for older cancer patients. The unadjusted survival rate declined slightly but steadily in the period subsequent to the BBA. However, using a logistic regression model, expected survival rates, adjusted for patient characteristics (age, gender, marital status, and race—with interactions) and cancer site and stage, did not differ significantly from year to year. Adjusted survival rates were slightly (and not significantly) higher in 2002 (0.747) compared with 1996 (0.740).

Discussion

The main findings with respect to home health care are consistent with expectations. The BBA restricted the eligibility criteria qualifying beneficiaries for home health services and, subsequently, fewer beneficiaries diagnosed with cancer accessed those services. Following the BBA, total payments fell along with the decline in payments for home care, but then began to rise again (as has been the trend in health care costs generally). The exception was terminal care; total payments continued to decline throughout our period of observation. The patterns of payments described using aggregated data held up in the regression models controlling for changes in the mix of beneficiaries diagnosed with cancer over time. However, regression adjustment fully attenuated the apparent decreasing trend in first year survival rates.

Savings in payments for home health services were overwhelmed by increases in the total costs of care for newly diagnosed cancer patients. Furthermore, for terminal cases even though decreases in home health payments were achieved, these were less than the increase in hospice payments. Nevertheless, total costs for terminal care declined substantially. This suggests that hospice utilization increased for persons with terminal illness; and, in fact, our analyses confirmed these findings. However, the decline in the absolute number of patients utilizing

home health services who were in the terminal phase of illness was greater than the increase in hospice utilization.

Home health may be a substitute for hospice for those patients who meet eligibility requirements—particularly for those patients, family members, and physicians who are reluctant to adopt a terminal diagnosis. Increased use of hospice services observed in this study may be a result of direct hospice policy changes under the BBA, indirect effects from home health policy changes under the BBA (which restricted eligibility for home health services), or strong secular trends toward greater acceptance of hospice and palliative care. Prior to and concurrent with the time that the BBA was being implemented there were large scale efforts to educate health professionals about end of life care; guidelines for hospice care were developed, particularly for cancer patients; and changes in cost reporting were introduced by the Health Care Financing Administration.^{17,18} It is difficult to tease out one change from the others, especially given the pre-post nature of the policy changes and the lack of a comparison group.

It will be important in the future to monitor the effects of increasing hospice utilization on the costs of end-of-life care. There may also be implications in these findings relevant to evaluating the effects of the “open access” movement in hospice care. Firms such as Aetna and UnitedHealth allow patients under hospice care to receive more aggressive medical therapies as well.

We found no significant effects of the BBA on patient survival. Furthermore, restrictions in home care immediately following the BBA did not result in increased utilization of other services that could indicate more frequent serious complications arising from cancer and cancer treatment. These measures, however, are at best crude proxies for quality of care. Additionally, we are not able to determine from this study the extent to which the decrease in the use of home health services was offset by an increase in informal care--shifting the burden from paid providers to family caregivers. We might speculate that this is the case because decreases in rates of utilization of home health services were much greater than increases in rates of utilization of hospice services.

Cancer patients provide a unique population in which to study the effects of the BBA. As shown, cancer patients access home health and hospice services at high rates, particularly proximate to the time of diagnosis and time of death. Cancer, as a category, is comprised of a broad spectrum of diseases with very different patterns of utilization and outcomes. Moreover, as noted by Brown et al., cancer treatment patterns can be studied longitudinally by defined phases of illness.¹³ Thus, dates of cancer diagnosis and dates of death provided reference points against which the effects of the BBA were measured. Finally, the SEER-Medicare database provided a unique opportunity for following large numbers of cancer patients over several years, where the precise dates of diagnosis and death were validated, along with detailed information on the type of cancer and stage at diagnosis.

The primary limitation to this study is the lack of any contemporaneous comparison group for assessing the effects of the BBA as would be derived from a fixed effects model specification. Because the changes in eligibility standards and reimbursement were implemented everywhere at once, there is no group unaffected by the changes with which to compare differences before and after the BBA. It is possible that other, unmeasured secular trends had an effect on the outcomes conjointly with the BBA. However, we are unaware of any contemporaneous policy or practice-based changes over this time period that would explain these.¹⁶ To some extent, we are able to check this by comparing the effects on different cancer diagnosis groups. Some groups, such as lung and pancreatic cancer patients, have a very high rate of utilization for home health and hospice care, while others, diagnosed with prostate cancer and melanoma

have relatively low utilization rates. All of these groups, however, experienced similar rates of decline in percentage terms and similar changes in cost profiles as the BBA was implemented. It is unlikely that there is an unknown underlying factor having the same effects across this broad spectrum of diseases.

Other limitations arise from the nature of the data. First, there is known geographic variation in hospice utilization rates.¹⁹ While the SEER registries have expanded to encompass a large portion of the US population, it is not a representative sample and derived estimates may not precisely reflect national population parameters. Further, the nature of the Medicare claims data led us to exclude persons enrolled in HMO plans from the analysis. To the extent that these enrollees differ from Medicare fee-for-service beneficiaries, their utilization rates for home health and hospice services may differ.

Further research is needed to determine whether the BBA and similar future policies under consideration result in appropriate utilization levels. Although we found no change in survival rates, this finding does not mean that service utilization rates, particularly for home health and hospice care, are optimal in terms of either cost considerations or quality of care. Our findings provide evidence that greater use of hospice care has coincided with cost savings for cancer patients in the terminal phase of illness. Further examination of how incentives provided by reimbursement structures affect clinical practice and the value of services are warranted. Studies comparing the quality of care in home health and hospice would be particularly important.

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Figure 1.
Patterns of Home Health and Hospice Utilization Relative to Month since Diagnosis and Year of Diagnosis

Figure 2.
Patterns of Home Health and Hospice Utilization Relative to Month of Death and Year of Diagnosis

Figure 3.
Unadjusted and Adjusted Survival Rates by Year

Table 1
Time Periods of Interest Relative to the BBA

<u>Prior to the BBA</u>	
<ul style="list-style-type: none"> - Home Health <ul style="list-style-type: none"> - Fee-for-service based on “reasonable costs” - Need for venipuncture could qualify beneficiary for home health services - Hospice <ul style="list-style-type: none"> - Fee-for-service reimbursement, not adjusted for geographic location - Patients liable if coverage denied - Physician certification good for 30 days, renewable once 	
<u>Balanced Budget Act Signed</u>	8/5/1997
<ul style="list-style-type: none"> - Home Health <ul style="list-style-type: none"> - Eligibility restrictions effective (venipuncture disallowed) - Hospice <ul style="list-style-type: none"> - Reimbursement rates adjusted for geographic location - Patients indemnified against liability if coverage denied - Physician certification good for 60 days, unlimited renewals 	
<u>Interim Payment Period for Home Health</u>	10/1/1997 – 9/30/2000
<ul style="list-style-type: none"> - Home health payments based on lowest of: <ul style="list-style-type: none"> - Reasonable Costs - Aggregate per Visit Costs - Aggregate per Beneficiary Costs 	
<u>Prospective Payment System (PPS)</u>	10/1/2000 - Present
<ul style="list-style-type: none"> - 60 Day Episodes of Care - Payments based Home Health Resource Groups <ul style="list-style-type: none"> - Clinical characteristics - Functional impairments - Service utilization rates 	

Table 2

Mean Age and Percentages for Cancer Cohort

	Full Sample N = 888,572	Decedents* N = 363,986
<u>Demographics</u>		
Age (Years)	72.0	75.2
Male	53.1	52.9
Married	55.4	47.7
White	83.5	82.8
Black	8.8	9.7
Hispanic	1.8	1.7
<u>Cancer Site, %</u>		
Bladder	5.8	5.3
Breast	18.8	9.6
Colon	15.6	17.3
Lung	17.5	35.3
Lymphoma	4.9	5.9
Melanoma	4.9	2.4
Pancreas	3.0	6.9
Prostate	23.1	11.5
Renal	2.7	3.0
Uterine	3.8	2.9
<u>Stage at Diagnosis, %</u>		
Local	29.8	18.3
Regional	19.8	26.7
Distant	13.0	28.2
Other/Unstaged	37.4	26.9
1-Year Survival, %	76.3	42.1

* All cause deaths, 1995–2003

Table 3
Average Payments, by Phase of Disease and Year of Diagnosis or Death Relative to the Balanced Budget Act

Diagnosis Year	Prior to BBA *			Enactment/Interim Payment Period			Prospective Payment System		
	1996	1997	1998	1999	2000	2001	2002	2003	2004
<u>Phase of Disease</u>									
Baseline, 12 Months Prior to Diagnosis									
Home Health Payments	366	312	265	173	168	157	175		
Total Payments	3,229	3,102	2,862	2,744	2,795	2,892	3,361		
Initial Care, Months 0-6 of Diagnosis									
Home Health Payments	535	494	352	282	310	349	367		
Total Payments	10,694	10,148	9,388	9,006	8,758	9,430	10,730		
Continuing Care, After Initial Phase									
Home Health Payments (per month)	55	41	41	36	36	37	36		
Total Payments (per month)	643	616	605	603	640	660	687		
Mean Continuing Care Months	26.2	27.0	27.4	26.3	20.5	14.9	8.5		
Terminal Care, 12 Months Prior to Death									
Home Health Payments	1,111	935	726	555	558	509	416		
Hospice Payments	1,817	2,608	2,860	3,002	2,708	2,892	3,094		
Total Payments	17,879	17,162	16,178	14,847	14,460	13,424	11,435		

* BBA - Balanced Budget Act of 1997

Table 4
Regression Results * Estimating Home Health, Hospice and Total Payments by Year Relative to 2002

Year of Dx/Death	Baseline			Initial (6 mo) Home Health Payments			Terminal (12 mo)		
	Parameter Estimate (Omitted Class)	p - Value		Parameter Estimate (Omitted Class)	p - Value		Parameter Estimate (Omitted Class)	p - Value	
1996									
1997	-66.34	0.0000		-52.53	0.0000		-198.04	0.0000	
1998	-112.71	0.0000		-214.32	0.0000		-648.57	0.0000	
1999	-225.33	0.0000		-305.03	0.0000		-956.36	0.0000	
2000	-250.74	0.0000		-279.97	0.0000		-892.03	0.0000	
2001	-257.57	0.0000		-247.20	0.0000		-899.37	0.0000	
2002	-245.62	0.0000		-243.23	0.0000		-1,131.72	0.0000	
Hospice Payments									
1996									
1997							(Omitted Class)		
1998							352.48	0.0000	
1999							529.79	0.0000	
2000							616.90	0.0000	
2001							251.44	0.0000	
2002							382.52	0.0000	
							641.73	0.0000	
Total Payments									
1996									
1997							(Omitted Class)		
1998							-1,657.20	0.0000	
1999							-4,213.08	0.0000	
2000							-6,248.70	0.0000	
2001							-8,299.60	0.0000	
2002							-8,343.21	0.0000	
							-8,358.24	0.0000	

* Controlling for age at diagnosis, sex, race, marital status, cancer site, and stage at diagnosis.