

ORIGINAL ARTICLE

Did the 1997 Balanced Budget Act Reduce Use of Physical and Occupational Therapy Services?

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ABSTRACT. Latham NK, Jette AM, Ngo LH, Soukup J, Iezzoni LI. Did the 1997 Balanced Budget Act reduce use of physical and occupational therapy services? *Arch Phys Med Rehabil* 2008;89:807-14.

Objective: To investigate whether use of physical therapy (PT) and occupational therapy (OT) services decreased after the passage of the 1997 Balanced Budget Act (BBA).

Design: Data from the nationally representative Medicare Current Beneficiary Survey (MCBS) were merged with Medicare claims data. We conducted cross-sectional analyses of data from 1995 (n=7978), 1999 (n=7863), and 2001 (n=7973). All analyses used MCBS sampling weights to provide estimates that can be generalized to the Medicare population with 5 common conditions.

Settings: Skilled nursing facilities (SNFs), home health agencies, inpatient rehabilitation facilities (IRFs), and outpatient rehabilitation settings.

Participants: Medicare beneficiaries who participated in the MCBS survey in each of the study years and had 1 or more of the following conditions: acute stroke, acute myocardial infarction, chronic obstructive pulmonary disease, arthritis or degenerative joint disease, or mobility problems.

Interventions: Not applicable.

Main Outcome Measures: Percentage of persons meeting our inclusion criteria who received PT or OT in each setting, and total units of PT and OT received in each setting.

Results: Multivariable logistic regression revealed no statistically significant differences in the proportion of people who met our inclusion criteria who used PT or OT from home health agencies across the 3 time points. For SNFs, an increase in the odds of receiving PT was statistically significant from 1995 to 1999 (odds ratio [OR]=1.42; 95% confidence interval [CI], 1.19–1.69) and 1995 to 2001 (OR=1.69; 95% CI, 1.39–2.05). For IRF and outpatient settings, a significant increase was observed between 1995 and 2001 (OR=1.71, OR=1.27, respectively). For OT, a statistically significant increase was observed for IRF and outpatient rehabilitation settings from 1995 to 2001. For SNF, the increase was statistically significant

from 1995 to 1999 and 1995 to 2001. Mean total PT and OT units received also increased across all settings from 1995 to 2001 except for IRFs.

Conclusions: Despite BBA mandates restricting postacute care expenditures, this nationally representative study showed no decreases in the percentage of Medicare beneficiaries with 5 common diagnoses receiving PT and/or OT across all settings and no decreases in units of PT and/or OT services received between 1995 and 2001 except for those in IRFs. This study suggests that the delivery of PT and OT services did not decline among persons with conditions for which rehabilitation services are often clinically indicated.

Key Words: Medicare; Occupational therapy; Physical therapy; Prospective payment system; Rehabilitation.

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IN 1997, THE U.S. CONGRESS passed the Balanced Budget Act (BBA) with a major goal of reducing the rapid growth in Medicare's postacute care (PAC) expenditures. PAC includes a host of chronic care services provided in different settings, including skilled rehabilitation services. Reimbursements for PAC rehabilitation services had increased rapidly after the 1984 introduction of prospective payment for acute care hospitals and ensuing reductions in inpatient lengths of stay (LOSs).¹ From 1989 to 1996, Medicare home health agency spending rose from \$2.8 to \$11.3 billion, and average numbers of annual home health care visits per Medicare patient increased from 27 to 72.² With escalating costs and concerns about widespread variability in utilization patterns,³ Congress aimed to control the growth in rehabilitation services provided by home health agencies, skilled nursing facilities (SNFs), inpatient rehabilitation facilities (IRFs), and outpatient rehabilitation settings. BBA mandates introduced prospective payment for Medicare PAC, phasing in new reimbursement methods across various settings over several years.⁴⁻⁶

This article uses a nationally representative database to analyze the use of 2 PAC services—physical (PT) and occupational therapy (OT)—by Medicare beneficiaries with five common diagnoses across various settings of care before and after the 1997 BBA. Looking simultaneously at service use across different rehabilitation settings is important because changes in 1 sector could alter care patterns in another setting. Additionally, exploring changes in service use is complicated by differing timeframes for implementing BBA-mandated prospective payment across PAC settings (fig 1). For instance, the BBA created an interim payment system for home health agencies, which was phased in over 12 months beginning October 1, 1997, and controlled both average spending per visit and per Medicare beneficiary; full home health agency prospective payment was implemented in October 2000. A prospective payment system (PPS) was implemented for SNFs in July 1998, and in January 2002 for IRFs. For outpatient therapy, the BBA imposed 2 annual \$1500 caps—one for PT and

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	1995 (1st study year)	1996	1997	1998	1999 (2nd study year)	2000	2001 (3rd study year)	2002
SNF					Prospective Payment System			
HHA			Interim Payment System				Prospective Payment System	
IRF								Prospective Payment System
Outpatient clinics					Therapy Caps			

Fig 1. Timing of the changes in different rehabilitation sectors as a result of the BBA. Abbreviation: HHA, home health agency.

speech-language pathology (SLP) and another for OT—but excluded services provided by hospital outpatient departments. The outpatient therapy caps came into effect in January 1999.

Prospective payments are calculated in different ways in each setting with many factors driving the payment calculation. Prospective payments in SNFs are adjusted for the severity of residents' functional limitations or case mix using the Resource Utilization Groups III case-mix measurement system, with higher payments provided for residents who receive higher levels of care.⁷ The severity adjustment algorithm includes rehabilitation treatment directly in the calculation of severity, which means that the prospective payments are based in part on the rehabilitation treatments provided. For IRFs, prospective payments are based on a classification into a case-mix group based on the patient's diagnosis, functional level (measured using the FIM instrument) and age.¹ Some adjustments are also made based on patient factors (eg, comorbidities) and institutional factors (eg, urban vs rural settings). In home health agencies, all agencies are required to use a 60-day episode rate as the basic unit of payment with adjustments allowed. A prospectively determined per-episode payment rate is case-mix adjusted. The case-mix adjustment is determined using a subset of times from the standardized Outcome and Assessment Information Set.⁸

Although the BBA changed payment rules for all PAC sectors, current evidence suggests that the impact of these changes varied across settings. IRF spending increased from 2000 to 2004, rising from \$3.6 to \$6.0 billion. In contrast Medicare home health agency spending fell abruptly, with total reimbursements decreasing from \$17.9 billion in 1997 to \$8.4 billion in 1999.⁶ The 20% of home care patients with the highest use experienced the steepest declines: their average visits fell from 151 to 67 from 1996 to 1999.⁹ SNF expenditures fell but less dramatically than for home health agencies, with spending reduced from \$13.1 billion in 1998 to \$10.4 billion in 1999.⁶ Outpatient therapy spending also dropped sharply when the therapy caps were initially in place, from \$2.1 billion in 1998 to \$1.4 billion in 1999, but returned to \$2 billion in 2000 when the caps were lifted.³ More recently, overall Medicare spending on postacute rehabilitation services has continued to rise from \$25 billion in 1999 to a projected \$42.1 billion in 2005, with increased spending projected in each of home health, skilled nursing, and inpatient rehabilitation settings over this time period.⁶

Controversy about PAC spending reductions, including reports of widespread layoffs of therapists,¹⁰ raised concerns that

certain BBA cuts had overreached. In response, the 1999 Balanced Budget Refinement Act delayed implementation of some BBA provisions, instituting a moratorium on the \$1500 cap on outpatient PT, SLP, and OT from 2003 until January 2006. The 1997 BBA aimed to constrain overall PAC expenditures, but the effects of the BBA on the provision of specific rehabilitation services by Medicare beneficiaries remain unclear. Although previous studies have explored the overall impact of the BBA on the entire PAC sector, including home health agencies, SNFs, and IRFs, little is known about its impact on the provision of PT and OT services that can be provided in multiple settings. Examining the impact of the BBA at the level of overall care provided within a single setting can obscure the impact that the BBA had on specific PT and OT services. In home health agencies, for example, the pattern of changes after the BBA differed depending on the specific type of services examined.^{6,8} Despite declines in overall home health agency service use, some therapy use actually increased by over 8%.⁸

This study examined PT and OT use by Medicare beneficiaries across settings (ie, SNFs, home health agencies, IRFs, outpatient rehabilitation settings) before and after the 1997 BBA. We focused on Medicare beneficiaries with 1 or more of 4 diseases (acute stroke, acute myocardial infarction [MI], chronic obstructive pulmonary disease [COPD], arthritis and degenerative joint disease [DJD]) and 1 condition (mobility impairment) that are likely to benefit from PT and OT services. Evidence from systematic reviews and meta-analyses of randomized clinical trials indicates that people who experience acute stroke,¹¹⁻¹⁴ acute MI,^{15,16} COPD,¹⁷ or arthritis and DJD^{18,19} benefit from rehabilitation services. For this article, we analyzed cross-sectional data from 3 periods: 1995 (prior to the BBA), 1999 (when the outpatient therapy caps were in place and the SNF PPS was fully implemented), and 2001 (when no therapy caps were in place). We hypothesized that after the 1997 BBA, the percentage of Medicare beneficiaries who receive PT and OT would fall, along with the amount of PT and OT received across treatment settings. We also compared the characteristics of Medicare beneficiaries receiving therapy during each time period and across care settings.

METHODS

To examine the provision of PT and OT across different settings, this study used cross-sectional data from the 1995, 1999, and 2001 Medicare Current Beneficiary Survey (MCBS) Cost and Use files, which link survey responses with Medicare

claims. The focus of this study was on changes in the percentage of people receiving PT and OT services and the units of PT and OT service provided across each year and by setting for this population. Due to sample size limitations, we did not focus on comparisons over time and by setting based on the participant's diagnosis or condition.

Data Source and Study Sample

The MCBS is a continuous, longitudinal survey that asks a representative sample of aged and disabled Medicare beneficiaries about their demographic characteristics, health conditions, self-reported functional status, health services used, and satisfaction with care, among other topics.⁶⁻⁸ Respondents (or appropriate proxies) are interviewed 3 times a year over 4 years (12 interviews total). New panels are introduced each fall, and completed panels are retired each summer; panels have approximately 3000 active respondents. Annually, supplementary sampling replenishes cells reduced by refusals or deaths.⁶ For analysis, survey sampling weights take into account problems caused by cumulative nonresponse over time.

For this analysis, we included MCBS data from 1995, 1999, and 2001. We excluded persons who were eligible for Medicare based on end-stage renal disease (0.7%–0.8% of the sample per year). We also eliminated people who were enrolled in health maintenance organizations (HMOs) because HMOs do not report claims for individual services (information required to count PT and OT services). Therefore, the results reported in this study do not apply to Medicare HMO patients. The percentage of the MCBS sample enrolled in HMOs ranged from 10% in 1995 to 17% in 1999 (MCBS has sometimes oversampled HMO enrollees to examine specific issues relating to HMOs).

We limited our analyses to Medicare beneficiaries with 1 of 5 conditions: acute stroke, acute MI, COPD, arthritis and DJD, or mobility problems, regardless of cause. We selected these conditions because of research evidence suggesting that PT and/or OT improves patients' outcomes. We identified conditions in 2 ways: self-reports about having the condition in response to MCBS questions; and diagnoses coded on physician or hospital claims using *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM). Acute MI and stroke were identified by ICD-9 codes for acute care hospitalization; arthritis/DJD and COPD were identified through response to either MCBS questions or ICD-9-CM codes on any claim; and mobility limitation was identified by positive responses to at least one of 2 MCBS questions about difficulty walking. To ensure that only newly occurring strokes and MIs were included, only hospital inpatient diagnoses were used to identify people with acute stroke and MI. Unlike the other 4 conditions, which were clinically more homogeneous, the mobility problems category captured self-reported walking difficulties, regardless of the cause. Although people could have more than 1 condition, each person was included only once in the analysis.

Identifying PT and OT Service Use

The Centers for Medicare & Medicaid Services links MCBS responses to administrative data, including Medicare insurance status, death, and the National Claims History (NCH) file. The NCH file contains all claims submitted for part A and B Medicare payments.

We identified all PT and OT services provided, regardless of setting, using either Medicare claims or MCBS responses. Medicare parts A and B generate claims reflecting their respective programs. Part A claims include hospital (including IRF),

home health agencies, and SNF services, whereas part B claims encompass other outpatient services provided by individual "suppliers," such as physicians. Each specific claim notes the provider type and setting of care, so we could distinguish PT and OT services provided in specific locations. All claims contained diagnoses coded using ICD-9-CM, as well as codes for specific services or procedures performed and Medicare payment amounts. Certain claims noted the number of "units" of particular services (one 15-min session constitutes an individual unit of PT or OT services); in other situations, simply counting the number of claims conveys the number of visits.

For claims from individual providers, we used the *Health-care Common Procedure Coding System* and the American Medical Association's *Current Procedural Terminology* codes to identify PT or OT services. For facility claims, we used the revenue center codes PT and OT services.

Identifying PT and OT Services From MCBS Responses

After their first interview, the MCBS asked respondents during each subsequent round to report medical and other services used during the intervening months. Interviewers typically review calendars prepared with respondents and based on health care appointments, bills, receipts, and other service-related documents accumulated by respondents since the last interview. Interviewers ask about Medicare-covered services, services reimbursed by another insurer (eg, Medicaid, private Medigap plans), and services purchased out-of-pocket by beneficiaries. Therefore, theoretically, the MCBS captures all health care services.

Content of Surveys

The MCBS follows respondents wherever they reside, conducting 2 types of surveys: (1) a computer-assisted community questionnaire for persons living in the community; and (2) a facility baseline questionnaire for respondents in long-term care settings.^{6,8} The facility questionnaire is administered to the facility administrator or designated staff, not to the Medicare beneficiary.

The 3 annual rounds of the community questionnaire emphasize slightly different topics, with updates on health insurance coverage, service use, and household characteristics during every round. Interviews typically last 1 hour. The first round annually collects demographic and income information, as well as details about health and functional status and satisfaction with and access to medical care. All 3 rounds (except for round 1 for newly empanelled respondents) collect details about use of covered and uncovered services. During each subsequent round, interviewers review utilization reported during the previous round, updating billing and other financial and utilization information.

If persons are institutionalized, facility administrators or other personnel are asked similar but shortened questionnaires, including queries about the respondents' health and functional status, insurance coverage, residence history, and the use and cost of services.⁶

Other Patient Characteristics

We looked descriptively at the percentages of persons receiving PT and OT services by various demographic and health variables. Demographic variables included age, sex, and race or ethnicity (ie, black, white, Hispanic). To describe the participant's place of residence, data were collected to determine if they lived in a care facility and whether they lived in an urban or rural community. Income was dichotomized to indicate whether respondents had household incomes less than \$25,000.

Other variables included the percentage of people who died during each year and the percentage who were admitted 1 or more times to an acute care hospital. To calculate these percentages, the number of people who died (or were hospitalized) was divided by the total number of people included in the study (ie, Medicare beneficiaries with 1 or more of the 5 conditions who received PT and/or OT) for each year and setting. Self-reported functional status was measured through 5 questions in the MCBS. Respondents reported whether they had difficulty with: stooping, crouching, or kneeling; lifting or carrying objects as heavy as 4.5kg (10lb), like a sack of potatoes; reaching or extending arms above shoulder level; either writing or handling and grasping small objects; and walking a quarter of a mile—that is, about 2 or 3 blocks. The MCBS also includes a question about health status: “In general, compared to other people of [your] age, would you say [your] health is: excellent, very good, good, fair, or poor?”

Data Analysis

All analyses used MCBS sampling weights and SUDAAN^a to account for the complex sampling design and to provide estimates for the entire Medicare population. For each year and each condition, we estimated the percentage of Medicare beneficiaries using each of PT or OT. The percentage was calculated as the number of survey respondents who had the study condition *and* received PT and/or OT divided by the number of survey respondents with the study condition. We also determined the mean and median units of PT or OT per person year for each setting.

We used multivariable weighted logistic regression (weight from the survey design cross-sectional weight) to estimate the adjusted association between year and PT (OT) use. Year was coded as an indicator variable representing each of the 3 years. The outcome (use of PT or OT) was coded as binary (equal to yes if the subject had PT or OT and was in a specific treatment site, and equal to no if the subject did not have PT or OT in this specific site). We reported the adjusted odds ratios (ORs), the 95% confidence interval (CI), and the *P* value for the overall effect of year on the probability of PT/OT use in the specific site.

RESULTS

Characteristics of People Receiving Services

When the characteristics of the people receiving PT or OT services were compared across years, most variables including age, sex, race, and self-rated health status did not vary significantly over time (table 1). Statistically significant changes did occur in 3 variables: the percentage of people living in a metro location increased, the percentage of low income people decreased, and activities of daily living (ADL) limitations scores decreased (ie, people had better ADL performance over time). The percentage of people with arthritis, COPD, incident acute MI, or who had multiple conditions did not change over time. From 1995 to 2001, the percentage of people with walking problems increased slightly (55.4% to 57.7%, *P*=.03), although the percentage of people with incident stroke decreased slightly (1.3% to 1.0%, *P*=.02).

People receiving care in SNFs were older, and those receiving rehabilitation in IRFs were the youngest. Persons receiving rehabilitation in SNFs had the highest death rate (20%) among the different settings of care, compared with death rates of 5% among those treated in IRF and outpatient settings. Persons receiving services in SNFs also had the lowest ADL scores, closely followed by those obtaining services in home health

agencies. One of the largest areas of variability across settings was the percentage of people who had experienced an acute care hospitalization. When data for a single year (1995) were examined, almost all persons receiving services in SNFs (98.6%) and IRFs (89.7%) had experienced an acute care hospitalization, although only 43.2% of people in outpatient settings were hospitalized during the year.

Percentage of Persons Receiving PT and OT

Overall, there was an increase in each of the study years in the percentage of survey respondents with one or more of our study conditions who received PT (ie, 14.9% in 1995; 16.4% in 1999; 18.4% in 2001). Smaller percentages of survey respondents with 1 or more of our study conditions received OT, but these numbers also rose over time from 5.8% in 1995 to 8.7% in 2001. When we looked at these changes by specific treatment settings, the percentage of Medicare beneficiaries with 1 or more of our study conditions who received PT and/or OT services either stayed the same or increased slightly from 1995 to 1999 and from 1999 to 2001 in SNF, IRF, home health agency, and outpatient settings (fig 2). Across all 4 settings, the percent of beneficiaries who received either PT or OT increased from 15.6% in 1995 to 17.1% in 1999 to 19.6% in 2001. From 1995 to 2001, the percentage of people receiving PT or OT from a home health agency remained stable (5.2% to 5.5%), whereas the percentage increased in SNF (3.5% to 5.3%) and outpatient (10.7% to 13.7%) settings (see fig 2).

Based on multivariable logistic regression analyses, no statistically significant differences in PT use proportions across the 3 years were found for home health agencies (table 2). For SNF, the increase in the odds of receiving PT was statistically significant from 1995 to 1999 (OR=1.42; 95% CI, 1.19–1.69) and 1995 to 2001 (OR=1.69; 95% CI, 1.39–2.05). For IRF and outpatient settings, a significant increase was observed between 1995 and 2001 (OR=1.71, OR=1.27, respectively). Table 3 shows the results of the model for OT use. The trend for OT was similar to PT. There were no statistically significant results observed for home health agencies, although a statistically significant increase was observed for IRF and outpatient from 1995 to 2001. For SNF, the increase was statistically significant from 1995 to 1999 and 1995 to 2001.

Amount of PT and OT Received

The amount of PT and OT received by persons obtaining these services increased across most settings from 1995 through 1999 to 2001 (figs 3, 4). The 1 exception was inpatient rehabilitation, in which there was a decline from 1995 to 1999 in both PT and OT units: PT: mean 62 (95% CI, 46–79) to 42 (95% CI, 35–50); OT: mean 61 (95% CI, 41–81) to mean 42 (95% CI, 31–53). There was an increase in SNF units during the same time period for both therapies, with PT units increasing from 37 (95% CI, 30–43) to 69 (95% CI, 52–85) and OT units from 29 (95% CI, 24–34) to 63 (95% CI, 44–81). Although the percentage of all persons receiving PT from home health agencies did not change across the 3 time periods, the mean units of PT increased from 14 (95% CI, 8–11) to 35 (95% CI, 31–38) from 1995 to 2001.

DISCUSSION

Despite changes in Medicare reimbursement policies intended to restrict the provision of PAC expenditures, and contrary to the fears of many in the rehabilitation professions, we failed to find evidence that the 1997 BBA resulted in a reduction in use of PT and OT services among Medicare beneficiaries with conditions that often benefit from rehabili-

Table 1: Characteristics of Study Participants by Setting and Year

Variable	All Sites*	IRF	SNF	HHA	ORF
Age (%85y+)					
1995	23.3	13.2	34.4	25.9	19.3
1999	24.6	20.6	37.0	28.4	17.4
2001	23.0	20.0	37.6	28.5	17.8
<i>P</i>	.476				
Sex (% male)					
1995	32.2	30.6	31.1	29.7	32.8
1999	33.0	30.4	29.4	32.1	33.4
2001	34.1	32.8	34.4	31.6	34.3
<i>P</i>	.596				
Race (% white)					
1995	86.0	86.9	89.0	83.9	86.5
1999	85.3	82.8	89.3	82.5	85.8
2001	84.2	86.2	88.3	84.2	84.4
<i>P</i>	.476				
Metro location (% urban)					
1995	74.0	68.8	72.7	80.0	72.7
1999	72.0	73.5	73.1	76.6	71.0
2001	75.9	75.7	73.7	77.0	77.0
<i>P</i>	.039				
Income (% <\$25,000)					
1995	78.7	87.3	83.2	83.8	75.8
1999	68.2	78.8	76.1	72.1	63.8
2001	67.5	66.3	74.6	75.3	62.4
<i>P</i>	<.001				
Facility residence (%)					
1995	12.8	1.1	12.8	2.6	15.5
1999	11.0	2.2	14.1	2.5	12.0
2001	13.3	2.5	20.9	3.3	13.6
<i>P</i>	.062				
Death (%)					
1995	9.2	5.1	20.0	9.8	4.9
1999	10.5	6.3	20.0	13.7	4.9
2001	10.6	8.6	22.6	11.2	6.2
<i>P</i>	.348				
Acute care hospitalization (%)					
1995	55.8	89.7	98.6	76.5	43.2
1999	56.7	96.7	97.2	81.2	41.4
2001	53.6	97.2	94.6	79.4	40.3
<i>P</i>	.330				
Mean ADLs ± SE					
1995	2.15±0.70	2.40±0.34	3.02±0.15	2.70±0.11	1.93±0.08
1999	1.93±0.07	1.92±0.18	2.64±0.12	2.21±0.12	1.62±0.07
2001	1.80±0.06	2.00±0.24	2.60±0.11	2.10±0.09	1.70±0.07
<i>P</i>	.002				
Self-rated health, poor-fair health (%)					
1995	47.5	54.7	50.5	56.6	44.9
1999	48.2	53.4	55	53.8	44.7
2001	49.0	49.4	58.8	55.7	46.0
<i>P</i>	.738				

Abbreviations: ADLs, activities of daily living; HHA, home health agency; ORF, outpatient rehabilitation facility; SE, standard error.

*Sample size, All sites: 1291, 1405, 1617; IRF: 82, 99, 120 (1995, 1999, 2001); SNF: 302, 427, 461 (1995, 1999, 2001); home health agency: 431, 437, 438 (1995, 1999, 2001); outpatient rehabilitation facility: 852, 916, 1108 (1995, 1999, 2001).

tation. Neither the percentage of all persons receiving PT and OT, nor the units of services used, declined across SNF, home health agency, IRF, or outpatient settings from 1995 to 2001. The only observed decline was in the units of PT and OT provided by inpatient rehabilitation facilities, and these were the only facilities that did not have any BBA-mandated changes during this study period. These findings contradict our

original hypothesis, which was that the 1997 BBA-mandated payment changes would reduce both the percentage of Medicare beneficiaries getting therapy and the amount of therapy received. Although some previous research has shown a steep decline in Medicare spending in some PAC settings during this time period, the findings from this study suggest that the delivery of the specific rehabilitation services (ie, PT, OT) did

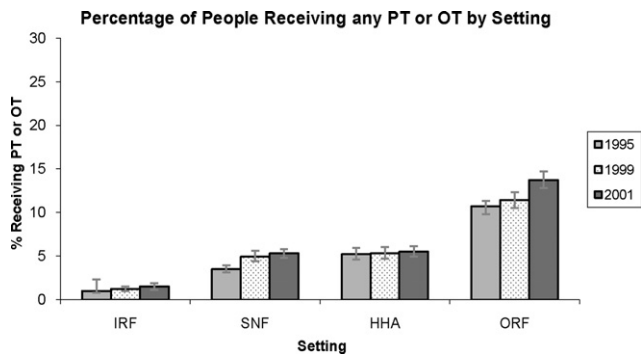


Fig 2. Percentage of people receiving any PT or OT, by setting. Abbreviations: HHA, home health agency; ORF, outpatient rehabilitation facilities.

not decline among persons with conditions where rehabilitation services are often clinically indicated.

Several recent studies report findings that are broadly consistent with our results. Despite the BBA mandates, a 2006 Medicare Payment Advisory Commission (MedPAC) report⁶ found that Medicare spending for PAC rehabilitation rose from 1999 (\$25 billion) to 2002 (\$32.9 billion), with total spending in 2005 estimated at \$42.1 billion. Earlier, MedPAC reported that although aggregate Medicare PAC expenditures declined by almost 10% between 1996 to 2001, a nearly 50% decline in spending for home health agencies explains almost all of this drop.⁵ This report found that the spending for and use of all PAC services except for home health care actually increased between 1996 and 2001. In a separate study, McCall et al^{4,20} looked at data from January to July 1997, before any BBA changes were in place, and compared this with January to July 1999 in people leaving hospital with a diagnosis of stroke, COPD, congestive heart failure (CHF), hip fracture, and diabetes. They found that across all diagnostic groups, there was an increase in the use of rehabilitation hospital and long-term care rehabilitation hospital care. Medicare beneficiaries with diagnoses of COPD, CHF, and diabetes, however, had a reduction in PAC use, which came mostly from reduced home health agency use.

Although our finding of no reduction in home health agency PT and OT for people likely to require therapy services might

Table 2: Adjusted ORs for the Likelihood of Receiving PT by Year for Each Treatment Site

Site of PT	Year	OR*	95% CI	P
IRF	1995	1.00		.003
	1999	1.22	0.90–1.65	
	2001	1.71	1.26–2.31	
SNF	1995	1.00		.000
	1999	1.42	1.19–1.69	
	2001	1.69	1.39–2.05	
HHA	1995	1.00		.170
	1999	1.04	0.86–1.25	
	2001	1.16	0.99–1.36	
ORF	1995	1.00		.000
	1999	1.04	0.91–1.19	
	2001	1.27	1.12–1.44	

*From multivariable weighted logistic regression model with covariates age, race, sex, marital status, income, education, metro location, facility residence, condition, and ADL score.

Table 3: Adjusted ORs for the Likelihood of Receiving OT by Year for Each Treatment Site

Site of OT	Year	OR*	95% CI	P
IRF	1995	1.00		.002
	1999	1.21	0.90–1.64	
	2001	1.74	1.29–2.36	
SNF	1995	1.00		.000
	1999	1.68	1.38–2.04	
	2001	2.05	1.64–2.55	
HHA	1995	1.00		.080
	1999	1.32	0.97–1.81	
	2001	1.39	1.02–1.88	
ORF	1995	1.00		.000
	1999	1.03	0.81–1.32	
	2001	1.46	1.15–1.86	

*From multivariable weighted logistic regression model with covariates age, race, sex, marital status, income, education, metro location, facility residence, condition, and ADL score.

appear surprising, given the dramatic reductions in overall home health agency services seen during the same period, this finding is consistent with several other recent studies. A 2006 MedPAC report,⁶ for example, noted that although overall Medicare spending on home health agency (overall) declined from \$15.7 billion (1995), to \$8.4 (1999), to \$8.7 (2001), the percentage of home health agency rehabilitation therapy visits increased from 9% in 1997 to 26% in 2002. This indicates that, consistent with our findings, the 1997 BBA may have produced a differential impact on specific rehabilitation services in contrast to overall PAC reimbursement levels. This is likely because the changes in the home health payment system actually reward the provision of therapy services (PT, OT, or SLP) over other home health agency services such as home health aids or nursing services by paying substantially more for a patient episode that meets the therapy threshold than for an episode of care for a patient at a similar functional and clinical severity level who does not require therapy. Consistent with this finding, Schlenker et al⁸ found that although home health care declined overall when PPS was implemented, a comparison from 1999 to 2000 (pre-home health agency PPS) to 2001 (post home health agency PPS) found that therapy visits (PT, OT, SLP) actually increased by 8.4%.

In SNFs, several studies found that the proportion of people receiving rehabilitation services did not decline after PPS.^{7,21} Murray et al²¹ found that the proportion of people receiving therapy increased between 1994–1996 and 2001, but the hours of therapy decreased slightly. This finding was condition specific, because people with medical conditions re-

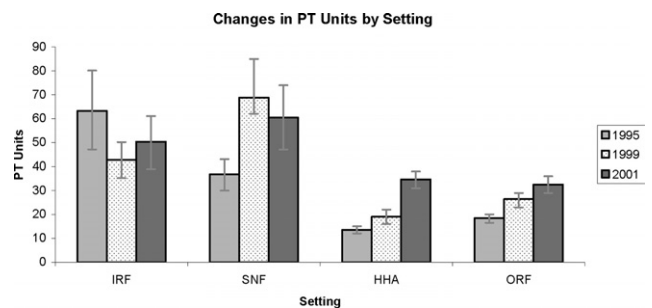


Fig 3. Changes in PT units over time, by setting.

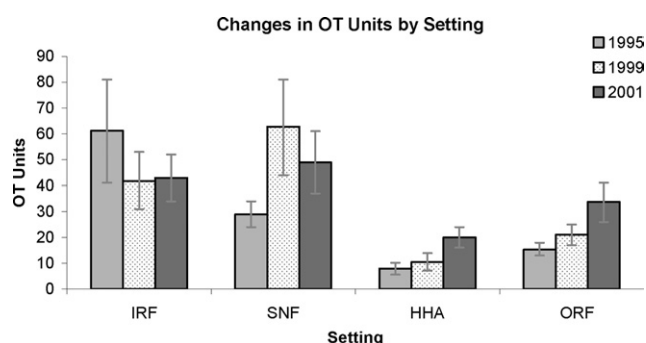


Fig 4. Changes in OT units over time, by setting.

ceived the largest increase in rehabilitation services and those with stroke experienced the greatest decline. Thus, as expected, results of studies depend heavily on the specific population examined, hampering efforts to compare findings across studies. Hutt et al²² found that therapy provision actually increased under the model SNF PPS, with highest functioning people having the greatest increases in therapy. As in home health care, the increase in the number of people receiving therapy could possibly be explained because of the incentives provided within the PPS, where the SNF algorithm for prospective payment explicitly includes rehabilitation services in the formula. A 2006 MedPAC report⁶ found that Medicare spending on SNF services has increased, but growth was moderated since PPS. Medicare spending for SNF services was \$9.1 billion in 1995, \$10.4 billion in 1999, and \$13.1 billion in 2001. Admissions and number of days increased from 1999 to 2001, exceeding the rate of growth in this population.⁶

The only setting that experienced a decline in units of PT and OT during this study period was the IRF. A reduction in the mean units of therapy could occur because of reduced access (eg, less service utilization) or because of reduced service provision (eg, fewer visits, shorter LOS). LOS was reduced in IRFs during this time,²³ therefore the observed decline in units of IRF may be related to decreased LOS rather than restricted provision of therapy. Our study did not find a reduction in the percentage of people who received PT and OT at IRFs.

Studies of the impact of the introduction of prospective payment in other settings provide important comparisons with this work. Numerous studies have explored the impact of Medicare's introduction of prospective payment based on diagnosis-related groups in acute care hospitals in 1983.²⁴⁻³² These studies indicate that prospective payment reduced hospital costs by reducing the average LOS.^{24-26,29,30} A large study^{27,33} of Medicare beneficiaries (n=16,758) in which half were hospitalized prior to prospective payment and half after found that the overall quality of care, measured by comparing the care received to particular standards (ie, not by measures of outcome) and the process of care improved after the introduction of prospective payment. This study and others also found no evidence that mortality increased after prospective payment was introduced.^{24,27,29,30} However, some negative outcomes associated with prospective payment were found, including an increase in the percentage of unstable patients (ie, people with important clinical problems usually first appearing after discharge) discharged home^{28,30} and an increase in the percentage of people with prolonged nursing home stays after acute hospitalization.²⁶ Changes in the utilization of service beyond acute care hospitals also occurred, as the percentage of people who transferred to subacute facilities such as SNFs, intermediate care facilities, and home health agencies increased.^{24,32}

A particular strength of this study is that it captured the actual changes in specific rehabilitation services (PT, OT), rather than inferring that the changes in therapy service provision paralleled overall changes occurring in specific sectors. In the case of home health agencies in particular, the large reductions in spending seen in some studies might have obscured the fact that the provision of specific PT and OT services actually increased.

Study Limitations

This study has limitations that are common to studies that use retrospective analyses of observational data. Claims and coded data can experience systematic error because some providers face different coding incentives and are more likely to be influenced by these incentives. Problems can also arise when self-report data are used to report medical conditions or service provision, because people's memories or understanding of their health problems might be faulty. Where possible, we attempted to use claims data but in some cases we relied exclusively on self-reports of PT or OT use. Another concern with self-report data is the use of proxy respondents, which were sometimes necessary for various reasons (eg, people could not answer for themselves, resided in institutions). Proxy reports of function have been found to provide similar, but not identical results as self-reports.³⁴ Our data were also limited because we did not have accurate records of LOS, which made it impossible to compare changes in this variable over time or adjust for any changes in our analyses.

As with any observational study, there are limitations to the interpretations that we can make from these data. This study cannot provide an explanation for the increase in use of PT and OT over time or the appropriateness of this level of use. It is not clear what might be the most cost-effective way to deliver PT and OT. It is possible that PT and OT use might have risen more quickly if the BBA and PPSs had not been implemented, but we cannot test this hypothesis with our existing data.

Caution is needed when interpreting the results of some of the subgroups studied. Although the overall sample was large, the number of respondents in some settings or with some conditions was small, which could affect the stability of our findings and limited our analytic options. Our current analytical approach also limited our ability to explore the relationship between the process variables and outcomes because the timing of the interventions and assessments could not be taken into account. Work is currently underway to explore these relationships with other analytic techniques. Finally, this study focused on the use of PT and OT services in people with specific conditions who were likely to need therapy services. Although this was a valid and necessary approach to ensure there was an adequate representation of therapy service usage, it does limit the generalizability of these data to other populations.

CONCLUSIONS

Contrary to our initial expectations, this study found that Medicare beneficiaries who had 1 of 5 specific conditions that were likely to require PT or OT did not experience decreases in inpatient, home health, or outpatient PT or OT after the introduction of the 1997 BBA. These findings suggest that the changes instituted by the BBA and subsequent legislation did not reduce the provision of PT and OT services for persons with the specific conditions studied.

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