

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Themes in the Economics of Aging

Volume Author/Editor: David A. Wise, editor

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-90284-6

Volume URL: <http://www.nber.org/books/wise01-1>

Publication Date: January 2001

Chapter Title: The Concentration of Medical Spending: An Update

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Chapter URL: <http://www.nber.org/chapters/c10328>

Chapter pages in book: (p. 217 - 240)

The Concentration of Medical Spending An Update

David M. Cutler and Ellen Meara

7.1 Introduction

Health care for the elderly in America is at the center of public debate. In the last two decades, the number of Medicare beneficiaries has increased by 50 percent, and Medicare spending per beneficiary has doubled in real terms.¹ Although rapid growth in medical spending affects all age groups, Cutler and Meara (1998) document that spending growth occurred most rapidly among the elderly from the 1950s through the 1980s, and that within the population over age sixty-five, spending grew fastest among the oldest old.²

These findings are difficult to understand, however, in light of changes in the health of the elderly. Manton and coauthors show that disability rates are falling among the elderly by about 1.5 percent per year (Manton, Corder, and Stallard 1997). Since the disabled spend much more than the nondisabled on medical care, it seems that in relative (if not absolute) terms spending on the elderly should be falling over time.

The combination of large increases in per-person spending and the reduction in disability leads to the paradoxical situation where policy ana-

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We are grateful to Monica Singhal for excellent research assistance, to Joe Newhouse for comments, and to the National Institute on Aging for research support.

1. Based on total Medicare expenditures and total enrollees in 1975 and 1995. See Health United States (1998, p. 367).

2. Relative spending by age group was fairly flat in 1953. By 1987, spending on the average eighty-five-year-old was more than five times as high as spending on those aged thirty-five to forty-four.

lysts call simultaneously for reforms to control Medicare cost growth (to bring spending growth for the elderly in line with other age groups) and for Medicare to cover currently uncovered services such as prescription drugs (to promote further health improvements).

The goals of this paper are to document how trends in spending by age have changed among elderly Medicare beneficiaries in the last decade and to reconcile the decline in disability rates with rapid increases in spending among the elderly. The first goal follows from our earlier paper (Cutler and Meara 1998), in which we analyzed medical spending by age from the mid-1950s through 1987. Since the medical world changed dramatically after 1987, we consider what has happened to age-specific spending since then. In the post-1987 period, we cannot look at spending for the elderly in comparison to the nonelderly, but we can look at spending for the younger and older elderly. The second goal is an attempt to reconcile increased spending with sharply declining disability. In particular, we relate medical spending by age to six factors: demographics, disability, time until death, intensity of treatment, prices, and changes in the nature of care.

We reach two central conclusions. First, we find that the trend of disproportionate spending growth among the oldest old has continued during the decade between 1985 and 1995. Between 1985 and 1995, spending for the younger elderly (ages sixty-five to sixty-nine) rose by 2 percent annually in real, per-person terms, while spending for the older elderly (ages eighty-five and up) rose by 4 percent. This is similar to the differential increase in spending by age over the 1953–87 period.

Second, we show that the reason for the large increase in spending on the oldest elderly in comparison to the younger elderly is the rapid increase in use of postacute services—home health care and skilled nursing care in particular—among the oldest old. People aged eighty-five and older used on average \$241 in postacute services in 1985 and \$1,887 in 1995, a 20 percent annual increase. The younger elderly, in contrast, increased their use of postacute services from \$49 to \$257, a 15 percent annual increase. Use of acute-care services, in contrast, grew relatively evenly by age, 1.2 percent annually for the younger elderly and 0.7 percent annually for the older elderly.

The increase in postacute service use is the explanation for the discrepancy between rising medical spending and falling disability. Lower disability by itself contributes to lower spending than we would otherwise observe. However, the increase in use of nontraditional services more than offsets the effects of improved health. The increase in postacute service use is also a major difference between the pre- and post-1987 trends. In our earlier work (Cutler and Meara 1998), we found that rising expenditures on the older population were a result of increased intensity of acute-care services for that age group. In the post-1987 period, intensity changes in acute-care treatments do not account for a substantial discrepancy by age.

The increase in postacute service use may reflect several factors: true increased service use for people who were not receiving care in the past; “gaming” of the Medicare system, whereby providers now use out-of-hospital services instead of in-hospital services; or outright fraud. We are unable to discriminate among these explanations, although we suspect each is important.

The paper proceeds as follows. Section 7.2 describes our data. Section 7.3 begins the analysis by comparing past and current trends in medical spending by age. Section 7.4 analyzes how changes in demographics, disability, and death contribute to spending over time. Section 7.5 examines acute-care spending. Section 7.6 examines postacute-care spending, and section 7.7 concludes.

7.2 Data

The National Long-Term Care Surveys (NLTCs) were conducted in 1982, 1984, 1989, and 1994 to determine the prevalence of disability among the Medicare population. A sample of about 35,000 individuals was drawn from Medicare administrative records and surveyed in 1982. In addition to standard demographic information, the survey collected detailed information on each individual’s instrumental activities of daily living (IADLs, such as managing money, keeping house, etc.) and activities of daily living (ADLs, such as dressing, bathing, etc.). In subsequent surveys, a subsample of those initially interviewed were rescreened to determine disability status and additional individuals “aged” into the NLTCs. In total, the NLTCs public use data set provides information on 35,848 individuals. The survey data for these individuals have been linked to all Medicare claims data from 1982 through 1995.

We use the NLTCs from the years 1984, 1989, and 1994, matched to Medicare records for 1984–85, 1989–90, and 1994–95.³ We pooled the Medicare data in two-year increments to increase the precision of our estimates.⁴ All numbers reported in the tables are in 1995 dollars adjusted using the Consumer Price Index Urban (CPI-U) deflator.

One drawback of the NLTCs for our purpose is that we have no link to other types of medical spending beyond Medicare. Approximately one-third of Medicaid’s budget pays for nursing home services for elderly recipients. Because such services are disproportionately skewed toward the older elderly population, however, we suspect that the omission of Medicaid-covered long-term care understates the growth in spending by the oldest

3. All calculations use the Center for Demographic Studies “screeener cross-sectional weights” to make tabulations representative of the Medicare population in those years.

4. We inflated expenditure data from 1984, 1989, and 1994 by the one-year nominal growth rate in per capita expenditures from 1984 to 1985, 1989 to 1990, and 1994 to 1995, respectively.

old. Further, nonhospital prescription drugs are not paid for by Medicare, and thus are unrecorded in the survey. We do not know how the omission of this category of care affects our results.

7.3 Past and Current Trends in Medical Spending by Age

During the period from the 1950s through the 1980s, the distribution of medical spending changed dramatically in the United States. Figure 7.1 and table 7.1 reproduce the trend in medical spending documented in Cutler and Meara (1998). The figure shows per capita medical spending relative to per capita spending for thirty-five-to forty-four-year-olds. In 1953, spending was fairly constant across age groups. Middle-aged and elderly individuals spent the same amount on medical care. From the 1950s to the 1980s, medical spending grew dramatically within all age groups, but by 1987, the oldest old (aged eighty-five and up) were spending over five times as much as the thirty-five to forty-four age group.

Panels *A* and *B* of figure 7.2 examine this trend for the NLTCs data between 1985 and 1995 for the population over the age of sixty-five. Over the last decade, spending among the youngest Medicare beneficiaries, those aged sixty-five to sixty-nine, grew by 2.0 percent annually, from \$2,062 to \$2,519. Among older age groups, particularly those over eighty-five, per-person spending grew at a staggering rate between 1990 and 1995. While the oldest old spent \$3,730 in 1985, they were spending \$5,709 by 1995, a 4.3 percent annual increase. To see this trend another way, panel *B* of

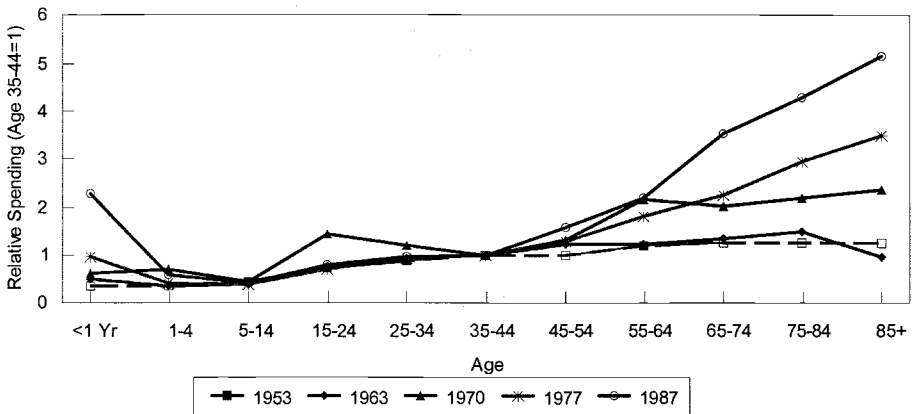


Fig. 7.1 The age distribution of medical spending, 1953–87

Source: Cutler and Meara (1998).

Notes: 1953 age groups include 0–5, 6–17, 18–24, 25–34, 35–54, 55–64, and 65 and up. Relative spending for 5–24-year-olds was constructed assuming a uniform age distribution. Dashed lines in 1953 connect all age groups that were combined when calculating relative spending.

Table 7.1 Medical Spending by Age and Type of Care

	65–69	70–74	75–79	80–84	85+
All medical spending (NMES)					
1963	1,102	1,178	1,417	964	819
1977	3,205	3,561	4,274	4,607	5,220
1987	4,999	5,451	5,594	7,522	7,580
Total Medicare spending (NLTCs)					
1985	2,062	2,479	2,918	3,505	3,730
1995	2,519 (2.0%)	3,205 (2.6%)	4,102 (3.4%)	4,400 (2.3%)	5,709 (4.3%)
Acute-care Medicare spending					
1985	2,002	2,397	2,782	3,276	3,482
1995	2,255 (1.2%)	2,782 (1.5%)	3,370 (1.9%)	3,389 (0.3%)	3,734 (0.7%)
Postacute-care Medicare spending					
1985	49	64	126	199	241
1995	227 (15.3%)	375 (17.7%)	693 (17.0%)	975 (15.9%)	1,887 (20.6%)

Source: Cutler and Meara (1998) and authors' tabulations based on NLTCs data from 1984, 1989, and 1994, matched to Medicare records for 1984–85, 1989–90, and 1994–95.

Notes: Numbers in 1995 dollars adjusted using CPI-U deflator. Numbers in parentheses are the annual growth rates from the previous year. NMES is the National Medical Expenditure Survey. NLTCs is the National Long-Term Care Survey.

figure 7.2 normalizes spending in each age group and year relative to spending by those aged sixty-five to sixty-nine in that year. In 1985, the oldest old were spending about 80 percent more than this reference group. By 1995, the oldest old were spending over twice as much per year as sixty-five-to sixty-nine-year-olds.

The trend toward greater spending increases with age is generally true for most of the age groups, with the exception of the eighty- to eighty-four-year-old population. These findings represent a continuation of the trend documented from the early 1960s to the 1980s—medical spending is growing rapidly for all elderly, but particularly among the oldest age groups.

7.4 Demographics, Disability, and Time until Death

An important component of changes in medical spending is changes in disability status. Two measures of disability have been highlighted in the literature (see Cutler and Sheiner 2001): functional status and time until death. Functional status is typically measured with ADL or IADL impairments. People who are functionally impaired spend more on medical care

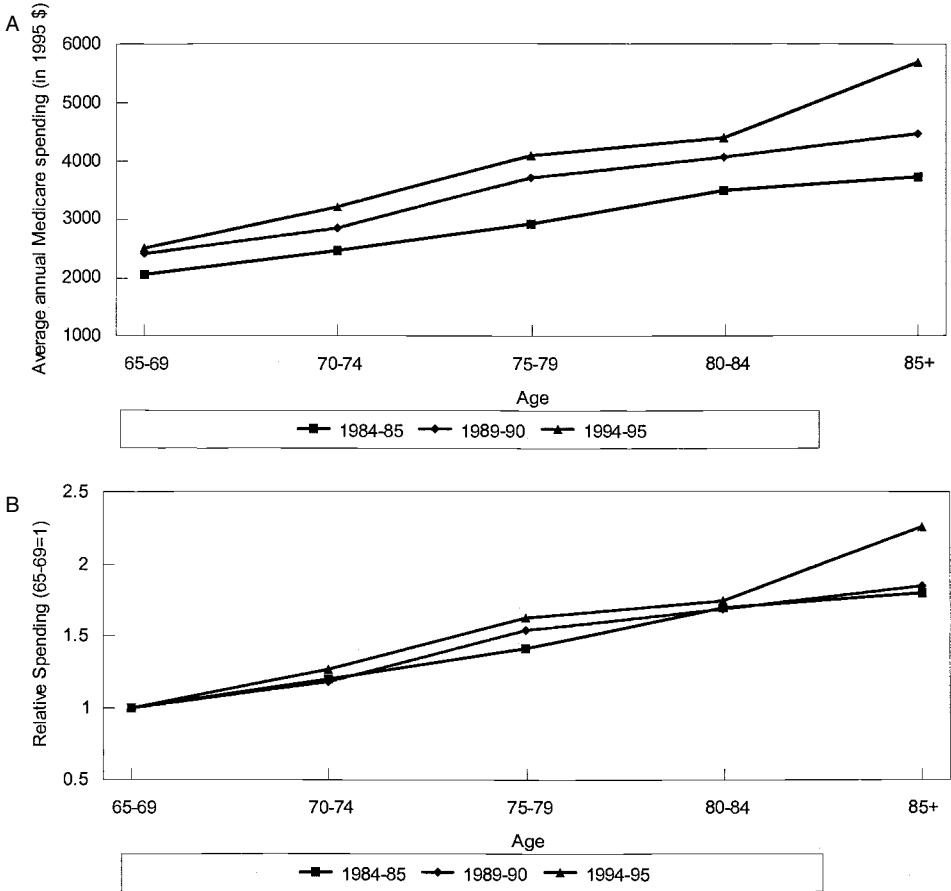


Fig. 7.2 Medicare spending per person: (A) total, (B) relative

Sources: Authors' tabulations based on National Long-Term Care Survey (NLTC) data from 1984, 1989, and 1994, matched to Medicare records for 1984-85, 1989-90, and 1994-95.

than those who are not impaired. Research also shows that those near death spend much more on medical care than those farther away from death (Lubitz and Riley 1993). About one-third of Medicare spending is during the last year of life.

Table 7.2 examines how the patterns of age, disability, and death rates influence medical spending. The table shows four models of annual individual Medicare spending in 1989 and 1990 (in other words, each observation represents one person-year of spending). Individual spending is shown as a function of basic demographics (age, sex, race, and marital status), disability status, and time until death. Column (1) relates Medicare spending to age, sex, race, and marital status alone (the coefficients on

Table 7.2 Explaining Medicare Reimbursement, 1989–90

Independent Variable	(1)	(2)	(3)	(4)
Demographics				
Ages 70–74	369 (151)	251 (148)	289 (149)	201 (147)
Ages 75–79	1,203 (190)	897 (190)	970 (185)	744 (187)
Ages 80–84	1,559 (177)	878 (183)	1,154 (174)	646 (187)
Ages 85+	1,990 (197)	398 (233)	1,120 (201)	–34 (232)
Female	–696 (127)	–777 (125)	–436 (121)	–526 (119)
Disability				
IADL limitations only	—	1,448 (267)	—	1,218 (259)
1–2 ADL limitations	—	2,235 (238)	—	1,905 (231)
3–4 ADL limitations	—	3,820 (383)	—	3,189 (379)
5+ ADL limitations	—	6,735 (617)	—	5,412 (593)
Institutionalized	—	3,594 (392)	—	2,464 (371)
Time until death				
Died in first quarter	—	—	10,464 (725)	9,513 (729)
Died in second quarter	—	—	7,242 (954)	6,402 (967)
Died in third quarter	—	—	10,971 (1,910)	10,200 (2,896)
Died in fourth quarter	—	—	12,460 (1,200)	11,824 (1,202)
R^2	.0106	.0375	.0698	.0862

Sources: Authors' tabulations based on NLTCs data from 1989, matched to Medicare records for 1989–90.

Notes: There are 31,693 observations in each regression. Regressions include controls for race and marital status (see text). Dependent variable is individual annual spending. ADLs are activities of daily living. IADLs are instrumental activities of daily living.

race and marital status are not reported). Consistent with earlier work, Medicare spending is highest for the oldest old. Those over age eighty-five spend almost \$2,000 more than those under seventy. Women spend \$700 less than men on average; this is also true holding constant functional status and time until death.

Column (2) adds measures of functional status to the regression. The differences in spending by age are much less dramatic when we control for disability status in column (2). Only those aged seventy-five to eighty-four spend more than sixty-five-to sixty-nine-year-olds. Essentially all of the

additional spending of those aged eighty-five and older is a result of greater disability.

Column (3) replaces the disability variables with measures of time until death. We include dummies for the quarter of death for those individuals who die in a given year. The result is similar in that in column (2). Time until death also explains a large part of the age effect. Advanced age is associated with only half as big a change when controlling for time until death.

Column (4) includes both functional status and time until death in the regression. Disability and time until death appear to have independent effects on Medicare spending. Together, these two variables explain essentially all of the age effect. The results in table 7.2 confirm those found in Cutler and Sheiner (2001) using the Medicare Current Beneficiary Survey. Age in itself is not associated with increased levels of Medicare spending; it is the decline in health status associated with both advanced ages and the period near death that leads to higher levels of medical spending.

As mortality rates among the elderly decline, fewer people are in the last year of life. Furthermore, disability among the elderly is falling. Table 7.3,

Table 7.3 Changes in Disease Incidence

Condition	Age- and Sex-Adjusted Rate		
	1984–85	1989–90	1994–95
All hospitalization	.306	.239	.218
Cardiovascular disease			
Acute myocardial infarction (AMI)	.012	.010	.010
Stroke	.006	.004	.003
Other ischemic heart disease	.022	.021	.020
Congestive heart failure	.017	.017	.016
Other cerebrovascular	.019	.016	.016
Cancer	.029	.021	.018
Respiratory disease			
Chronic obstructive pulmonary disease	.008	.005	.009
Emphysema	.0007	.0004	.0006
Kidney failure	.0020	.0015	.0018
Musculoskeletal injury			
Hip fracture	.010	.009	.009
Other fracture	.0086	.0065	.0051
Mental illness			
Depression	.0004	.0003	2.90e-05
Schizophrenia	.00018	.00014	.0004
Alzheimer's disease	.0022	.0018	.0018
<i>N</i>	42,986	32,294	33,786

Sources: Authors' tabulations based on NLTC data for 1984, 1989, and 1994, matched to Medicare records for 1984–85, 1989–90, and 1994–95.

Notes: Disease rates are based on the 1990 age-sex distribution. An individual is defined as having a condition when hospitalized with the condition at any time during the year.

for example, shows rates of hospitalization for common illnesses. Overall hospitalization rates fell from 31 to 22 percent in the decade studied. There were declines in rates of hospitalization for virtually all diseases shown.

Table 7.4 shows rates of disability and mortality between 1984 and 1995. Overall disability rates fell by about one to four percentage point for those aged sixty-five to seventy-nine. For those over age eighty, however, rates of disability fell dramatically, by about 7 percentage points. Rates of severe disability were much more constant over this period, falling only slightly. The declines were greater, however, at older ages. These trends are striking in light of the pattern of declining mortality. The share of people who will die in a given year has declined on average within all age groups over sixty-five. As others have suggested (Manton, Corder, and Stallard 1997), not only are Americans living longer, but they are living with fewer functional limitations.

The combination of longer life and reduced disability suggests that medical spending for the elderly should be falling, particularly at advanced ages. In table 7.5 and figure 7.3, we combine changes in disability and death rates with our estimates of how disability and death impact medical spending to simulate how spending would have changed based solely on changes in disability and death rates. We use the regression coefficients from the fourth model in table 7.1 (excluding race and marital status) to make this prediction.⁵ Predicted spending falls slightly, from \$3,324 to \$3,212 over the decade shown in table 7.5, and the decline is somewhat greater for the older elderly than for the younger elderly (figure 7.3).

It is apparent that figure 7.3 and panel *B* of figure 7.2 are in conflict. The changes in disability and death predict that relative spending for the oldest age groups should fall compared with those age sixty-five to sixty-nine, or at worst stay the same. In fact, medical spending increased twice as rapidly for the oldest elderly in comparison to the younger elderly.

The remainder of the paper aims to explain why spending by age is increasing when the underlying health of the population is improving.

7.5 Acute-Care Spending

To examine why age patterns in spending have changed, we divide medical spending into two parts: acute-care spending and postacute-care spending. *Acute care* is defined as spending for inpatient and outpatient care in general hospitals and physicians' offices. Postacute-care spending includes spending on skilled nursing facilities, hospice care, home health, and comprehensive outpatient rehabilitation facilities. This distinction is imperfect. Some rehabilitative care may show up in our measures of acute-care spending, since the Medicare claims data do not allow one to distin-

5. Our estimates hold constant the 1989–90 age and sex distribution.

Table 7.4 **Disability Rates by Age and Year (%)**

Age Group	Any Disability			Severe Disability			Share of People Dying that Year		
	1984	1989	1994	1984	1989	1994	1984	1989	1994
	65–69	10.4	9.2	9.5	3.9	4.0	3.7	2.4	2.1
70–74	15.4	14.1	12.0	6.1	5.5	4.9	3.4	3.2	2.6
75–79	23.7	22.3	19.7	10.1	9.9	9.2	5.1	5.2	4.5
80–84	37.6	35.5	30.6	18.3	18.9	15.8	8.2	7.4	7.6
85+	63.7	60.4	57.1	39.3	39.5	38.0	14.2	13.1	14.2

Sources: See table 7.3.

Note: Severe disability is defined as either 3 or more ADL limitations, or institutionalization.

Table 7.5 Predicted Spending Based on Disability and Death

Year	Predicted Spending (\$)	Ratio
1984-85	3,324	
1989-90	3,333	1.00
1994-95	3,212	0.97

Sources: See tables 7.2 and 7.3.

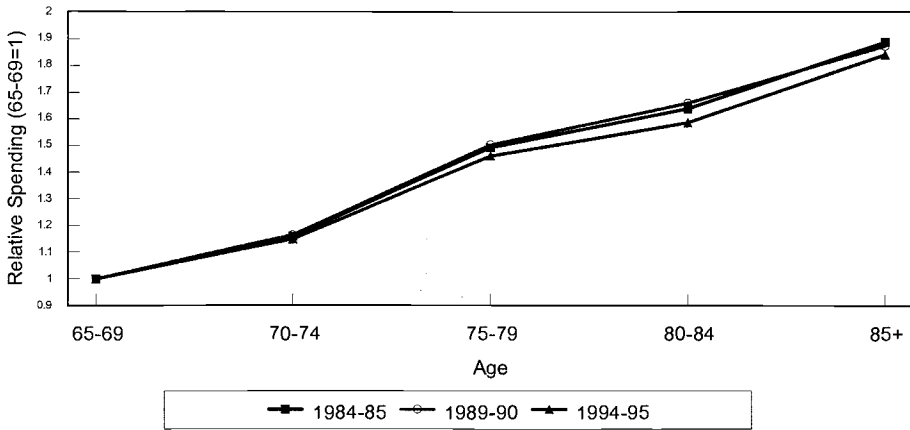


Fig. 7.3 Projected spending based on disability and death

Source: See fig. 7.2.

guish perfectly between rehabilitative care and acute care, but the distinction is generally a meaningful one.

The vast majority of spending on acute care is for inpatient hospital care. Inpatient care is reimbursed prospectively based on one of more than 400 diagnosis-related groups (DRGs). Each patient is assigned a DRG based on the predominant diagnosis of admission; DRGs are then given relative weights in accordance with the intensity of treatment typically provided for that diagnosis. Payments are formed as the product of the DRG weight and a price, as follows:

$$(1) \quad \text{Reimbursement} = \text{DRG weight} * \text{Price}$$

Over time, either weights or prices may change. For example, weights for surgical DRGs are generally higher than for medical DRGs, so that, as more people receive surgery over time, the average DRG weight will increase (Cutler and McClellan 1998). Changes in intensity of treatment have historically been significant. Cutler and Meara (1998) document that changes in technology for treatment of major illnesses such as cancers and heart disease coincide with large increases in spending for the elderly.

Medicare also updates the price paid for services over time. The increase in the update factor was designed to keep pace with the growth of input costs for hospitals, although actual update factors have increased less rapidly, in response to other changes in the health system (Cutler 1998).

We examine the intensity of treatment by focusing on major diseases of old age where hospital admission is a good indicator of illness. The diseases include acute myocardial infarction (AMI, or heart attack), stroke, other ischemic heart disease, congestive heart failure, other acute cerebrovascular disease, cancer, chronic obstructive pulmonary disease, hip fracture, other fracture, Alzheimer's disease, and kidney failure. For each individual we construct an intensity measure equal to the sum of DRG weights for all hospital visits in a year.

Table 7.6 shows the average intensity measure across respondents, and for respondents with each of the diseases listed above. The average intensity measure per Medicare beneficiary has actually declined over time, as hospitalization rates have fallen. Conditional on being admitted to the hospital, however, the intensity of treatment has risen over time by about 21 percent. Intensity is rising over time even within a diagnosis. To examine three well-defined acute diagnoses, we constructed several ninety-day intensity measures. We summed all DRG weights for services provided within ninety days of an admission for AMI, stroke, or hip fracture. The last three columns of table 7.6 demonstrate that the intensity of services for these three diagnoses has risen in the last decade. The rise in intensity of services overall implies about a \$1,000 increase in spending. However, the rise in intensity cannot explain the roughly \$5,000 per person increase in spending for individuals who were hospitalized in a year.

The other component in equation (1) that could lead to increased medical spending is the price paid for medical services. As noted above, however, the update factor has not increased rapidly. Indeed, in real terms between 1985 and 1994, the update factor fell by 7 percent. These cuts in the update factor were in response to gaming in the prospective payment system. Immediately following the implementation of prospective payment in 1984, the average diagnosis became much more serious relative to before prospective payment. The increase in serious diagnoses (or "diagnosis creep") reflected provider attempts to increase payment. Medicare officials responded by cutting the increase in the update factor. Further cuts in the update factor were a component of deficit reduction legislation in 1990 and 1993. Price increases, therefore, play no role in the rise of Medicare spending.

The net effect on acute-care spending is reflected in figure 7.4, panels *A* and *B*. Acute-care spending rose slightly in all age groups, but the rise was smaller among the older elderly than among the younger elderly. Among the sixty-five to sixty-nine age group, spending rose from \$2,000 to about \$2,300, a 1.2 percent annual increase (table 7.1). Elderly over age eighty-

Table 7.6 Changes in Intensity of Treatment

Condition	Annual DRG Weight for Individuals Admitted to Hospital for Condition			90-Day Episode DRG Weight for Individuals Admitted to Hospital for Condition		
	1984–85	1989–90	1994–95	1984–85	1989–90	1994–95
All respondents	0.580	0.542	0.507			
All hospitalized respondents	1.89	2.25	2.29			
Cardiovascular disease						
Acute myocardial infarction (AMI)	2.80	3.53	3.81	2.29	3.22	3.09
Stroke	2.56	3.59	3.07	2.25	1.82	2.33
Other ischemic heart disease	2.87	3.42	3.62			
Congestive heart failure	2.99	3.14	3.34			
Other cerebrovascular	2.17	2.50	2.40			
Cancer	2.99	3.32	2.87			
Respiratory disease						
Chronic obstructive pulmonary disease	2.70	2.76	2.86			
Musculoskeletal injury						
Hip fracture	3.03	3.38	3.27	2.70	3.01	2.76
Other fracture	1.64	1.83	2.02			
Alzheimer's disease	2.37	2.16	2.67			
Kidney failure	3.92	4.25	4.48			
<i>N</i> (total)	30,011	26,237	28,292			
<i>N</i> (hospitalized)	9,468	6,663	6,713			

Sources: See table 7.3.

Notes: DRGs are diagnosis-related groups. DRG weights are those prevailing in 1989. Ninety-day intensity measures constructed for AMI, stroke, and hip fracture only.

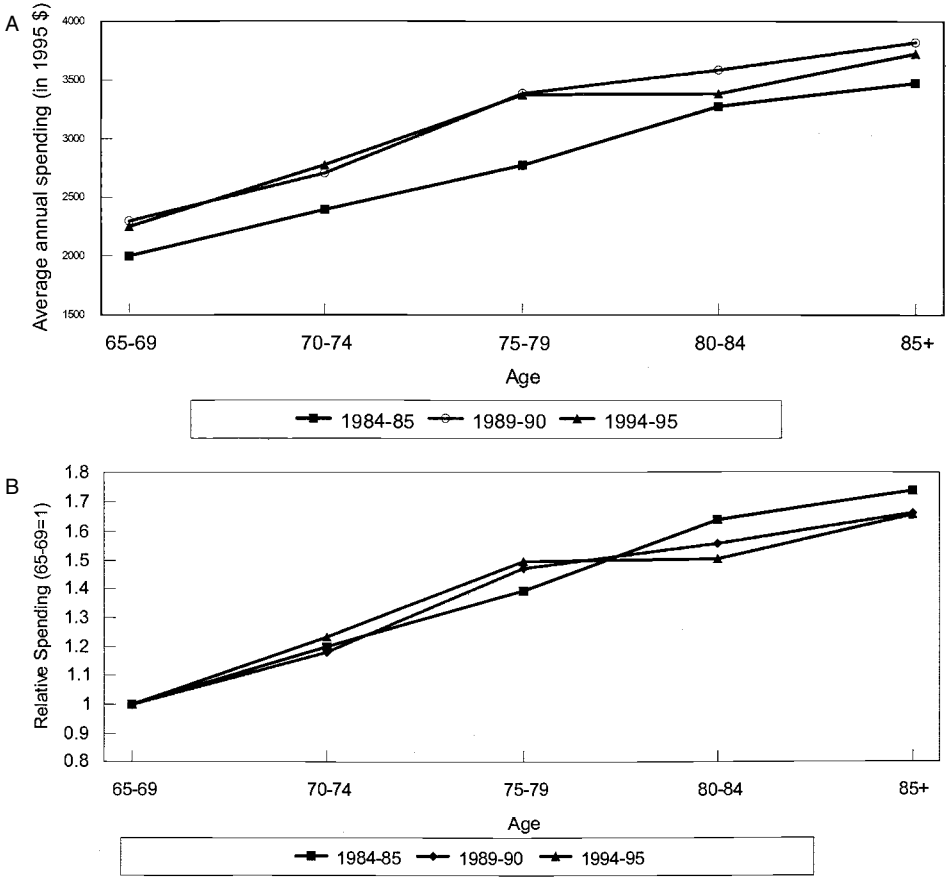


Fig. 7.4 Acute-care spending per person: (A) Medicare, (B) relative

Source: See fig. 7.2.

Note: Acute care includes inpatient and outpatient services delivered in general hospitals, doctors' offices, and other acute-care sites.

five witnessed a 0.7 percent annual increase, from \$3,500 to \$3,700. Relative spending on acute care actually fell modestly for the oldest age groups.

Taken together, the information on acute-care spending suggests that increases in the intensity of treatment offset disability changes slightly, but changes in prices do not. The overall annual change in medical spending for the elderly explained by increased use of acute-care services is only 1 percent (compared to a 3 percent average increase for the elderly population), and the increase is greater for the younger elderly than for the older elderly. Other explanations are clearly more important in explaining the growth in medical costs for the elderly population as a whole, particularly for the oldest elderly.

7.6 Postacute-Care Spending

To complete the picture of changing Medicare spending, we examine the fastest growing portion of Medicare costs, postacute-care services. As noted above, postacute-care spending includes home health, hospice care, comprehensive outpatient rehabilitation care, and skilled nursing care.

Figure 7.5, panels *A* and *B*, demonstrates the striking growth in real spending on these services. Growth in real, per-person postacute services ranged from 15 percent per year for the youngest elderly to 21 percent per year for the oldest elderly (table 7.1). The numbers are staggering. In 1995,

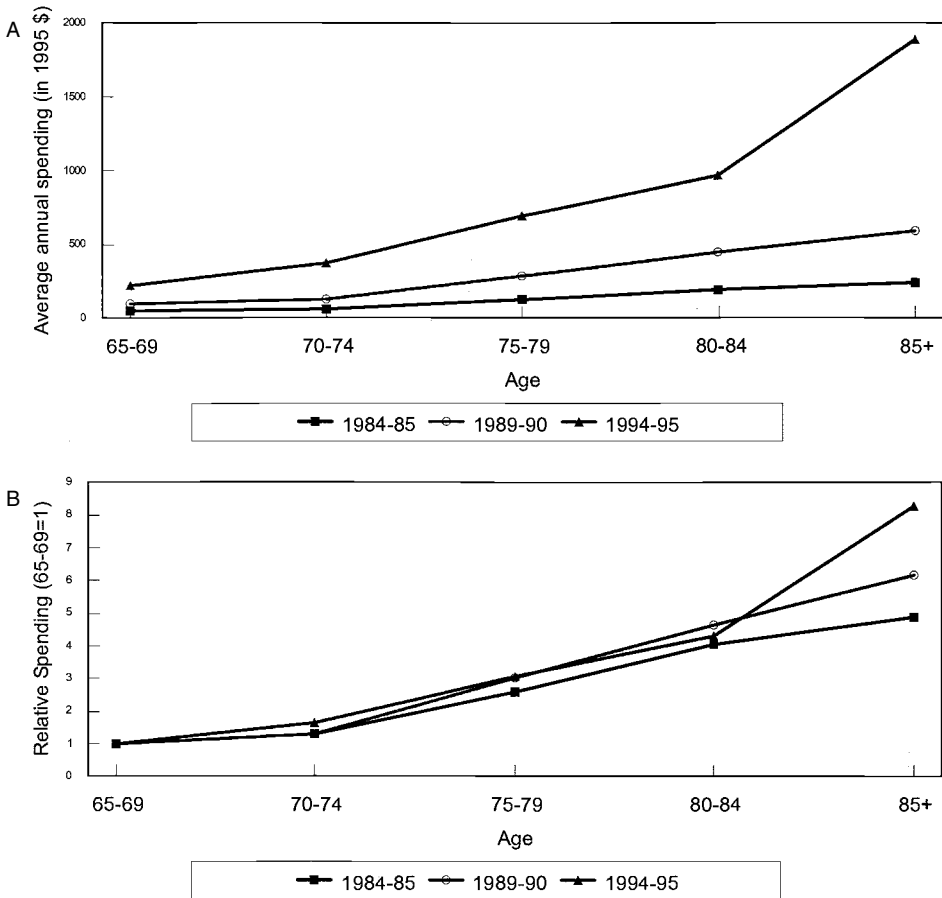


Fig. 7.5 Postacute-care spending: (A) average, (B) relative

Source: See fig. 7.2.

Note: Postacute care includes skilled nursing, home health, hospice care, and comprehensive outpatient rehabilitation facilities.

Table 7.7 Postacute-Care Spending for Hip Fracture and Stroke Patients (\$)

Condition	1984–85	1989–90	1994–95
Hip fracture	1,567	3,207	5,220
Stroke	1,488	3,151	4,311

Sources: See table 7.3.

Notes: Postacute care includes skilled nursing, home health, hospice care, and comprehensive outpatient rehabilitation facilities. Spending is average annual spending for individuals admitted with hip fracture or stroke.

the oldest elderly averaged nearly \$2,000 per person on postacute services, up from \$240 in 1985. As displayed in figure 7.5, panel (b), this contributes significantly to higher relative spending among the population over age eighty-five. Relative postacute spending for the oldest elderly compared to the younger elderly rose from a factor of five to a factor of more than eight.

To understand what these services involve, consider the canonical case of an elderly person with a stroke or hip fracture. Such a person needs some acute-care services (for example, a hip replacement), and then a period of recovery involving physical and occupational therapy and perhaps help with routine services the person is not able to perform on his or her own.

Table 7.7 shows the steady rise in average annual postacute-care spending for individuals admitted to the hospital with a hip fracture or stroke. Hip fracture patients spent about \$1,600 in 1984–85. By 1994–95, however, they spent about \$5,200, an increase of more than 200 percent. Cost increases were similar for people with strokes. What is interesting about these conditions is that by most measures, people with hip fractures or strokes are getting healthier over time (Cutler and Richardson 1997). Thus, the increase in postacute service use is unlikely to be only a response to sicker elderly.

Increases in postacute service use might reflect one of three factors. The first is “gaming,” or changes in the site of care. Care that follows an injury such as a hip fracture provides a good example of this. Inpatient care is reimbursed prospectively, so hospitals receive the same payment regardless of whether they provide rehabilitative care in the inpatient setting. Postacute care is reimbursed on a cost basis, however, when services are used. Thus, if hospitals unbundled postacute care from the inpatient setting, they can collect additional revenues at no extra cost.

In some cases, this unbundling occurs in the hospital itself. Hospitals can set up a wing for rehabilitation or skilled nursing care. These services many simply involve wheeling the hip fracture patient down the hall, delivering the same services as were delivered before but collecting higher reimbursement. In other cases, the home health agency or skilled nursing facility will be a separate provider. This increase in *spending* may be associated

with a reduction in *costs*. Outpatient settings are generally cheaper than inpatient settings, so that total costs may fall even as reimbursement is rising.

A second explanation is that increased postacute spending reflects additional use of services. The rules on when the elderly could use postacute services were relaxed substantially in the late 1980s, just before the explosion in service use. At least some of the additional service use may be a result of individuals' having access to services they previously either went without or had a family member provide informally.

The final explanation is that increased postacute service use represents fraud in the program. Since postacute services are provided in a person's home, by small agencies that are not easily monitored, the potential for fraud is vast. Recent congressional testimony highlighted frequent instances of fraud in the home health program. The testimony cited one estimate suggesting that as many 40 percent of home health claims should have been denied.⁶ This number is sobering, given that home health has risen from 1 percent of Medicare spending in 1970 to more than 13 percent in 1995.

We have no way to differentiate among these theories with our data, since the inpatient data do not indicate completely what services are provided. Disentangling the alternative sources of cost growth in postacute care is a major research topic.

A related topic is the health consequences of the shift in health care delivery toward more postacute-care settings. It may be socially beneficial, if costly, for people to receive care outside a hospital setting. Postacute providers may have more skill in their jobs than nurses in an inpatient setting have. Patients also prefer being at home over being in a hospital. This too is an important topic for future research.

7.7 Conclusion

Over the last decade, medical spending for the oldest old has continued to increase more rapidly than for the youngest old. However, unlike the spending growth in the early 1980s, this growth has little to do with increased intensity of treatment. Over the 1990s, much of the spending growth relates to increased use of postacute-care services. Some of the increased spending on postacute care likely reflects gaming of Medicare through such practices as unbundling care to maximize reimbursement; some may reflect increased service use; and some may be outright fraud.

Our results have not addressed the question of what this increased medical spending is buying. This question is central in evaluating the growth of medical costs for the elderly and nonelderly population. Medical spend-

6. See HCFA's website, [<http://www.hcfa.gov/testimony/1998/980318.htm>].

ing is valuable if it purchases services worth more than their cost and problematic if the services are worth less than their cost. Additional research on the importance of Medicare in improved health would complement the findings here about the sources of Medicare cost-increases.

References

- Cutler, David. 1998. Cost shifting or cost cutting?: The incidence of reductions in Medicare payments. In *Tax policy and the economy*, Vol. 12, ed. James Poterba. Cambridge, Mass.: MIT Press.
- Cutler, David, and Mark McClellan. 1998. What is technological change? In *Inquiries in the economics of aging*, ed. David Wise. Chicago: University of Chicago Press.
- Cutler, David, and Ellen Meara. 1998. The medical costs of the young and old: A forty-year perspective. In *Frontiers in aging*, ed. David Wise. Chicago: University of Chicago Press.
- Cutler, David, and Elizabeth Richardson. 1997. Measuring the health of the United States population. *Brookings Papers on Economic Activity, Microeconomics*, 217–72. Washington, D.C.: Brookings Institution.
- Cutler, David, and Louise Sheiner. 2001. Demographics and medical care spending: Standard and non-standard effects. In *Demographics and fiscal policy*, ed. Alan Auerbach and Ronald Lee, 253–91. Cambridge: Cambridge University Press.
- Lubitz, James D., and Gerald F. Riley. 1993. Trends in Medicare payments in the last year of life. *New England Journal of Medicine* 328:1092–96.
- Manton, Kenneth, Larry Corder, and Eric Stallard. 1997. Chronic disability trends in elderly United States populations: 1982–1994. *Proceedings of the National Academy of Sciences* 94:2593–98.

Comment Joseph P. Newhouse

This paper bears on both the short- and long-term futures of Medicare. By pointing to the postacute area it touches on a short-term issue, and by placing the role of disability and end-of-life care in perspective it touches on a long-term issue. In my remarks I wish to focus on the short-term issue because it seems more serious than is commonly recognized. Much of the debate of the past year or so has focused on how Medicare can be financed after the baby boomers begin to turn sixty-five in 2010. I wish to argue,

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however, that there is a serious problem in the here and now, namely that Medicare's administered pricing systems are breaking down. Before turning to that point, however, I note that any overall appraisal of the importance of the decline in disability, and to a lesser degree the increase in life expectancy, should account for costs in the Medicaid program, especially those attributable to chronic long-term care.

Viewed from a very great distance, the history of how Medicare has reimbursed institutional providers might run as follows. Beginning in 1966, Medicare reimbursed the lesser of charges or patient care costs up to some specified limits. Costs rose, and critics pointed out that cost reimbursement was a low-powered payment method that permitted substantial inefficiencies. As a result, in fiscal 1984 the federal government enacted the prospective payment system (PPS) for inpatient hospital services, a higher-powered payment method. The government acted to change reimbursement for hospital services in part because such services represented the largest single expenditure of Medicare, around a third, and because a method for prospective payment was readily at hand, namely the diagnosis-related group (DRG) system. The DRG system, which aggregated the thousands of diagnosis codes into around 500 groups and paid each group a lump sum, had been under development for about a decade and a variant of it had been used to reimburse hospitals in New Jersey.¹ In part because prospective methods were not available for other institutional providers, the remainder of the reimbursement system remained cost based and entry rules were permissive.

Hospitals thus had an incentive to unbundle inpatient services and to shift as much overhead as regulations would permit to services other than inpatient services. As a result of unbundling, the last day in the hospital building was more frequently spent in the skilled nursing facility (SNF) or the rehabilitation unit than on the general medical or surgical service after 1984. Earlier discharge also resulted in more home health visits. Marginal revenue for the last day on the SNF or the rehabilitation unit or for a home health visit was positive, whereas (except for outlier cases) it was zero on the medical and surgical service.

Reimbursement for entrants was also permissive, leading to substantial entry. The number of home health agencies, SNFs, and rehabilitation facilities grew at annual rates of 9, 6, and 4 percent, respectively, in the 1990–97 period (Medicare Payment Advisory Commission 1998). The number of hospitals, by contrast, was falling during this period.

As a result of unbundling and entry, the use of SNF and home health services skyrocketed. The rate of increase was especially marked after

1. Although often referred to as a lump sum, in fact, around 5 percent of the dollars were placed in an outlier pool and paid on the basis of (approximately) marginal cost. Moreover, several of the DRGs depended on the procedure performed. The PPS was thus considerably less high powered than often asserted. See McClellan (1997).

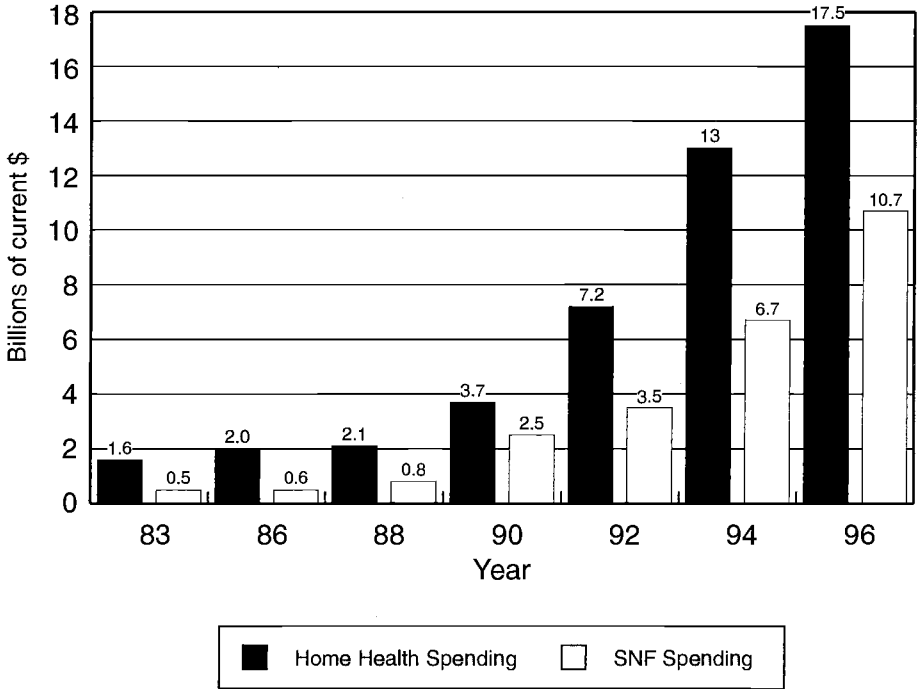


Fig. 7C.1 Spending on home health and skilled nursing facility services

Source: Author's tabulations based on Medicare Payment Advisory Commission (1998) data.

1988, when a court decision nullified the regulatory methods the Health Care Financing Administration had been using to hold down usage of SNF and home health services following the implementation of the PPS. About half of the home health use, however, comes from visits that do not follow a hospital stay, so causes other than unbundling were also important in the growth of home health services.

Figure 7C.1 shows the dramatic growth of SNF and home health spending, which grew 38 and 30 percent per year, respectively, between 1988 and 1996. Most of the spending growth reflected increases in services; during this period home health visits per beneficiary grew 25 percent per year and SNF days per beneficiary grew 18 percent per year (computed from data in Medicare Payment Advisory Commission 1998). As a result of this growth, postacute services, which include home health, SNF, rehabilitation hospitals and units, and long-term hospitals (with the first two being the largest), grew from less than 5 percent of Medicare Part A spending in 1988 to more than 25 percent of Part A spending in 1996. This is a percentage of a large pie, since Part A of Medicare is the second largest domestic program in the federal budget, exceeded only by Social Security.

Furthermore, the pie itself was growing at a rapid rate; Part A spending in real terms grew 8.5 percent per year between 1988 and 1996.² By 1996 the payment system for these services seemed to have reached the end of its useful life.

As a result, Congress in 1997 enacted the Balanced Budget Act, which decreed that separate prospective payment systems should be developed for the remaining institutional providers. In particular, home health, SNF, rehabilitation facilities, long-term hospitals, and outpatient departments of hospitals were all to have their own prospective payment systems. The general view seemed to be that the PPS had been a good thing for inpatient services, and that in any event spending on these other services seemed out of control, so prospective systems should be developed for these other services as well.

I want to argue that implementing such systems will be exceedingly difficult and that, more generally, the administered pricing system of traditional Medicare is breaking down. (The administered pricing system Medicare uses for health maintenance organizations (HMOs) also has serious problems, but I have discussed those issues elsewhere; see Newhouse, Beeuwkes Buntin, and Chapman 1997; Newhouse 1998; Wilensky and Newhouse 1999.) Traditional Medicare is by far the largest part of the Medicare program, accounting for more than 85 percent of the dollars. Because most observers believe traditional Medicare will continue to have a large share of enrollees well into the future, and because Medicare is such a large share of the federal budget—around an eighth and growing—this breakdown is a serious policy problem.³

There are at least four kinds of difficulties with implementing PPSs for these other institutional providers. The first two are related; I shall call them the *silo problem* and the *problem of substitution*. In effect, separate PPSs mandate a budget cap for each provider type. However, we have just seen that there has been rapid and to some extent unpredictable growth in these services from year to year. Although a budget cap may bring federal spending under control, the possibility of making a substantial error when setting the cap *ex ante* means that some beneficiaries may not receive needed services, and those beneficiaries may not be the ones that were intended to be without those services. Separate budget caps for various providers—different silos—only exacerbate the problem if some kind of technological change or change in the epidemiology of disease means that care should shift from one type of provider to another.

The problem of substitution arises because the patient can obtain many postacute services in several places. A stroke patient, for example, could

2. This calculation uses the GDP deflator to convert nominal spending to real terms.

3. Even if Medicare moves to a defined contribution or premium support approach, traditional Medicare seems likely to dominate in small towns and rural areas because of natural monopolies from having only one hospital or type of specialist nearby.

possibly obtain the necessary physical therapy in a freestanding rehabilitation hospital or a rehabilitation unit (part of a hospital), in a freestanding SNF or an SNF that is part of a hospital, in an outpatient department, at home, or in an outpatient rehabilitation facility. (Of course, not all these providers may be available in any given local market.) One would like the reimbursement system to be consistent with the optimal choice of facility.

Medicare can pay very different amounts per patient in different venues. This occurs partly because different types of cases go to different facilities. For example, patients who are to receive more intensive rehabilitation disproportionately go to the rehabilitation facility, whereas those receiving less intensive rehabilitation go to the SNF. As a result, costs per patient are higher at the rehabilitation facility. Under a cost-based system this difference did not much matter with regard to where the patient was treated; but if facilities are to be paid a set price that is a function of the national average cost of those admitted to that type of facility, it obviously does matter. There are regulations constraining admissions to rehabilitation facilities; otherwise the equilibrium with a much higher per-patient price for rehabilitation facilities than for SNFs would presumably find every patient in a rehabilitation facility.

Indeed, the basis of payment is not even the same for rehabilitation facilities and SNFs. Those admitted to the rehabilitation facility or unit, for example, are paid on a per-case (per-admission) basis, whereas those admitted to the SNF are paid on a per diem basis. If these differences were maintained in a prospective system, the incentive would be to admit the short-stayers to the rehabilitation facility and the long stayers to the SNF.

The third problem is that 18 percent of those who use postacute services use more than one service. This means that if payment is per case for each type of provider, some method will have to be found to allocate a given payment among many providers. A method has been developed in the PPS for doing this in the case of hospitalized patients who are transferred from one hospital to another, but the rate of such transfers is much less for acute hospital care, about one-twentieth as great as among postacute providers. As a result, errors in the allocation of the DRG payment among acute care hospitals are less serious.

A fourth problem is stinting or underservice. In general, economists do not believe that systems in which marginal revenue is zero will work well unless consumers are well informed and can monitor that they are receiving an entire bundle of services for which they contracted (Pauly 1980). There are well-known informational disadvantages of consumers in the medical marketplace in general, not to mention to rate of dementia among the Medicare population, so that consumer monitoring of the adequacy of the bundle seems like a weak reed to rely upon. Indeed, exactly what constitutes medically appropriate postacute care—what should be in any bundle of services for which Medicare is paying—is not nearly as clear as

for acute hospital care. This is especially true for home care, where even monitoring what is delivered can be a problem. As a result, having a system with nothing paid for additional services, which is what many have in mind when they speak of prospective payment, would seem to invite underservice.

Because of the problem of substitution and multiple provider use, some have proposed one stand-alone prospective postacute system. This, however, would seem enormously vulnerable to moral hazard; 77 percent of Medicare beneficiaries discharged from the hospital currently use no postacute services. It would not seem difficult, however, to justify a few home health visits to check on possible side effects of prescribed medication if there were a large payment for any use of home health services, as opposed to the per-visit payment that exists now.

My own view is that it makes sense to bundle payment for postacute services with the payment for hospital services, but include a much more generous outlier provision than is the case for hospital services. The outlier provision would be budget neutral, as is the case for the existing hospital outlier program; the intent would be to have most services with some marginal revenue. As long as the marginal revenue did not substantially exceed marginal cost; one should not observe overservicing. The issue of developing prospective payment systems would still remain for the outlier part of the system, but errors would be less critical than if all payment for postacute services were running through the PPS.

There is an issue about who should receive this bundled payment. Postacute care providers have traditionally vehemently opposed giving such a payment to the hospital on the grounds that they would “medicalize” social services; but now that many large and medium-size hospitals own postacute providers this objection seems to have less force. A possible legal objection is that giving the entire payment to the hospital, along with the responsibility for the cost of the episode, would infringe upon the patient’s freedom of choice of postacute provider. This could in principle be handled by new legislation; the issue is whether the home health agency with which the hospital contracts is seen more like the laboratory with which it contracts (where few seem concerned about freedom of choice) or the physician group with which it contracts with (where beneficiaries are generally allowed choice). An alternative to paying the hospital an amount that covers postacute in addition to acute services is to pay a third party and let that party contract for postacute services. Bundling, of course, does not resolve the issue of how to price the roughly half of home health services that are not preceded by a hospital stay.

Finally, there is an issue about whether Medicare in the aggregate has overpaid because of unbundling or gaming. Undoubtedly there is some overpayment, but the degree of overpayment is tempered by the update factor for hospital inpatient services, which is to some degree a function of

the amount of unbundling. In particular, the Medicare Payment Advisory Commission (and the Prospective Payment Assessment Commission before it) explicitly includes a site-of-service adjustment in making its recommendation to Congress on the magnitude of the update factor for inpatient services. This site-of-service adjustment is intended to adjust for the amount of unbundling. Since that practice began three years ago, the magnitude of the site-of-service adjustment has been substantial. Ultimately the question of overpayment turns in part on how many postacute services in how many facilities should be delivered. That question, however, is well beyond the scope of this paper and may well be beyond the current state of the art.

In sum, Medicare is now trying to harden the budget constraint that postacute providers face. Doing so, however, poses large implementation problems, and finding a method that does not itself cause substantial distortions is very difficult. Although the issues of financing Medicare in the long run have grabbed the headlines, the short-run pricing issues seem equally serious.

References

- McClellan, Mark. 1997. Hospital reimbursement incentives: An empirical analysis. *Journal of Economics and Management Strategy* 6 (1): 91–128.
- Medicare Payment Advisory Commission. 1998. Health care spending and the Medicare program: A data book. Washington, D.C.: The Commission.
- Newhouse, Joseph P. 1998. Risk adjustment: Where are we now? *Inquiry* 35 (Summer 1998) 122–131.
- Newhouse, Joseph P., Melinda Beeuwkes Buntin, and John D. Chapman. 1997. Risk adjustment and Medicare: Taking a closer look. *Health Affairs* 16 (5): 26–43.
- Pauly, Mark. 1980. *Doctors and their workshops*. Chicago: University of Chicago Press.
- Wilensky, Gail R., and Joseph P. Newhouse. 1999. Medicare: What's right? What's wrong? What's next? *Health Affairs* 18 (1): 92–106.