
End of Life Medicare and Medicaid Expenditures for Dually Eligible Beneficiaries

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In 1995, combined Medicare and Medicaid spending in the last year of life for dually eligible beneficiaries was more than \$40,000 per beneficiary. Medicaid's share, primarily for long-term care (LTC), constituted about 40 percent of the total. Beneficiaries under age 65, Black persons, and individuals who died in a hospital had higher than average expenditures. The vast majority (86 percent) received some form of supportive services (nursing home, home care, hospice services). It is critical that policy deliberations consider both acute and LTC use concurrently because of their extensive use by dually eligible beneficiaries, as well as the interaction of the two funding sources (Medicare and Medicaid) that cover them.

INTRODUCTION

Persons dually eligible for Medicare and Medicaid and individuals in their last year of life have exceptionally high health care costs. Largely because of their poorer health status, dually eligible beneficiaries have Medicare costs that are about 1.5 times that of other Medicare beneficiaries (Medicare Payment Advisory Commission, 2004). Because of declining health status due to chronic diseases or onset of a fatal episode of acute illness, persons in their last year of life also require extensive health care. For example, Medicare costs

of decedents are approximately five times that of Medicare beneficiaries who do not die in the year (Eppig, 2003). While analytically separate, these two groups overlap.

In light of the high health care costs of beneficiaries at the end of life and those who are dually eligible, policymakers have an ongoing interest in exploring strategies to provide health care services for them as efficiently as possible. Moreover, many dually eligible beneficiaries at the end of life require both extensive acute care and LTC services. For example, one-fifth of persons with dual eligibility receive institutional care, in contrast to only 3 percent of non-dually eligible Medicare beneficiaries. To inform public policy deliberations about care provision for dually eligible beneficiaries at the end of life, it is important to understand their patterns of both Medicare and Medicaid services, since the two funding sources jointly cover acute and LTC for this population.

In this article, we describe Medicare and Medicaid service use and costs of dually eligible beneficiaries who died in 1995 or 1996 in 10 States by examining their patterns of health care use for the 12-month period preceding their deaths. To date, only a few studies addressed this population and they were mostly limited to small geographic areas (e.g., a single county) (Temkin-Greener et al., 1992; Scitovsky, 1988). This article extends prior research and examines the health care use patterns of deceased, dually eligible beneficiaries in a much larger geographic area. Our aim is to shed additional light on the acute and LTC services received by this important population.

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The article addresses the following research questions:

- What are the characteristics (e.g., sex, race) of dually eligible beneficiaries who died in 1995 and 1996?
- How does the role of Medicare and Medicaid financing of end-of-life care vary by demographic and service use characteristics?
- What role does Medicare and Medicaid-financed supportive services or LTC play in end-of-life care?
- How does acute and LTC spending change over the last year of life?

BACKGROUND

Dually Eligible Beneficiaries

Older people and younger persons with disabilities are Medicaid-eligible when they meet Medicaid's income and resource eligibility standards, usually those of the Supplemental Security Income (SSI) program, or by meeting the financial resources requirements and spending down their income on medical and LTC expenses (Bruen, Wiener, and Thomas, 2003). Medicare covers most of the cost of hospital care, physician services, and other acute care services for elderly and disabled individuals. For these persons, Medicaid pays the coinsurance for Medicare services, and also covers other health care services not covered by Medicare, such as long-stay nursing home care, home and community-based LTC services, and prescription drugs (in 1995 and 1996). Thus, for dually eligible beneficiaries, Medicare is the primary source of financing for acute care services, while Medicaid is the main source of financing for LTC services.

Relative to Medicare beneficiaries in general, the dually eligible population consists of higher proportions of persons who are either under age 65 or over age 85,

female, and Hispanic or Black (Medicare Payment Advisory Commission, 2004). Prior research has found that dually eligible beneficiaries tend to be sicker than other Medicare beneficiaries. They are twice as likely to report poor health status, and six times more likely to have over four dependencies in activities of daily living (Merrell, Colby, and Hogan, 1997).

As they are currently structured, Medicare and Medicaid do not offer an integrated system of care for dually eligible beneficiaries. Each program has historically been run completely separately, even though their coverage domains and populations overlap. This arrangement often forces dually eligible beneficiaries to navigate a confusing and poorly coordinated system of care (Scanlon, 1997). Fragmentation in administration and overlap in coverage also create incentives for cost shifting between the two programs. For example, States have incentives to have providers bill Medicare for as many services as possible since it is entirely federally funded, unlike Medicaid where States are expected to share in the costs.

End of Life Costs

Medicare spending for beneficiaries at the end of life has been an important topic of health care research since the late 1980s, stimulated largely by the finding that spending for decedents greatly exceeded that of survivors and because of concern that aggressive treatment provided to people at the end of life might be ineffective and against the wishes of patients and their families (Lubitz and Prihoda, 1984; The SUPPORT Principal Investigators, 1995).

Findings from the research generally suggest that acute care expenditures for end of life care may be unavoidable. For example, the high Medicare costs of

individuals at the end of life are quite comparable to those of survivors who were equally sick, suggesting that the average costs of decedents were the result of their illnesses rather than their death (Temkin-Greener et al., 1992; Garber, MaCurdy, and McClellan, 1998; Scitovsky, 1984). Moreover, elderly decedents who received expensive care, tended to be relatively young (age 65-79) and had good functional status not long prior to death (Scitovsky, 1988; Tempkin-Greener et al., 1992). These individuals were patients whom physicians said they “would not feel justified in not treating aggressively” (Scitovsky, 1988).

Most of the research on end of life care has focused on Medicare-financed services, largely because of the accessibility of uniform national level data on Medicare service use and costs. Only a few studies addressed Medicaid spending and the interaction of acute care services and LTC costs (Scitovsky, 1988; Tempkin-Greener et al., 1992; Hoover et al., 2002). This interaction is critically important because a substantial amount of spending and utilization is for LTC services. In addition, LTC may substitute for acute care in some instances. Prior research suggests that, while older decedents have lower acute care costs than younger decedents, the difference is largely offset by higher nursing home or Medicaid costs by older persons (Scitovsky, 1988; Hoover et al., 2002; and, Temkin-Greener et al., 1992).

DATA AND METHODS

Data Sources

Data for this study were extracted from the Multi-State Dually Eligible Data Files that were developed by Mathematica Policy Research, Inc., for CMS. The database was created to support general studies on the health care utilization and spend-

ing of dually eligible beneficiaries. The database contains linked information for 1994-1996 from enrollment and claims files for Medicare and Medicaid dually-eligible beneficiaries in 12 States. Information on enrollees from the linked files includes date of birth, date of death, sex, race, and Medicaid eligibility status. Information from the Medicare claims files includes use and costs for all types of Medicare services, with details such as covered days, number of visits, expenditures, and diagnoses. Medicaid claims data are also available for all types of services, including inpatient and outpatient care, LTC, and prescription drugs. Medicare and Medicaid data were linked at the individual level to provide complete utilization and expenditure information financed by the two sources.

Sample and Analysis File

Because of problems with data quality, we limited our analysis to individuals from 10 of the 12 States in Mathematica's Multi-State Files: Colorado, Florida, Georgia, Indiana, Iowa, Kentucky, Maine, Michigan, New Jersey, and Wisconsin. Although the sample for our study is not necessarily representative of the U.S. as a whole, beneficiaries in these 10 States represent 25 percent of the total Medicare population.

We selected a sample of deceased individuals from Mathematica's files for whom 12 months of data prior to death were available. Specifically, we selected a cohort of individuals who died between July 1, 1995, and December 31, 1996. We excluded from the sample individuals who had either Medicare or Medicaid health maintenance organization enrollment (11 percent of the original sample) because health maintenance organizations do not generally report detailed service use and costs of their enrollees. The resulting sample consists of 152,019 individuals from

the 10 States. Although 76 percent of the sample was dually eligible over the entire 12 months, others were only so for part of the year, with approximately equal percentages having dually eligibility status of 1-11 months.

For each month of the 12-month period, total utilization (e.g., covered days, visits) and spending for each sample member was extracted. Medicare services were grouped by hospital, skilled nursing facility (SNF), home health, and hospice care; all other services were combined into another category. For Medicaid services, hospital, nursing home, home care, hospice, and prescription drugs were identified; all other services were combined into another category. Because of ambiguities associated with location or type of some categories, only those services that could be crisply assigned were separately identified.¹

Although Medicare and Medicaid both cover care in nursing homes, Medicare coverage is very limited in days of coverage, requires a prior hospitalization, and is limited to persons needing skilled nursing or rehabilitation care. In contrast, Medicaid covers long-term nursing home care for persons requiring assistance because of functional or cognitive disabilities. These two services are distinguished by referring to Medicare coverage as SNF care and Medicaid coverage as nursing facility care. Likewise, we distinguish between Medicare home health agency care and Medicaid home care, which includes home health, personal care, and a wide range of services under Medicaid home and community-based services waivers.

Demographic variables from the Medicare and Medicaid enrollment files included age, sex, and race. We created a nursing home stay variable to indicate

whether each person was likely to be a LTC resident of these facilities. We based the variable on days of stay in Medicaid nursing facilities, and created three categories: no days, 1-30 days, and 31+ days. Location of death was categorized as being in a hospital or in a nursing home by employing a daily location indicator developed by Mathematica for its original study of all dually eligible beneficiaries. Although individuals could be in two locations on the same day (e.g., hospital and nursing home), the incidence of these occurrences is small. In this article, we assigned location of death hierarchically in the order of hospital, nursing home, and other location.

Chi-square and *t*-tests were used to detect statistically significant use and cost differences between subgroups of the population. Because of the large sample sizes, virtually all comparisons were statistically significant at the $p = 0.05$ level.

FINDINGS

Beneficiary Characteristics

Percent distributions and range of percentages of the beneficiary characteristics across the 10 States are presented in Table 1. Dually eligible beneficiaries are mostly very old (40.6 percent are age 85 or over), female (66.6 percent), and White (81.8 percent). Given the States in our sample, the range of percentages of population by race varies widely. For example, the percent of Black persons across the States ranges from virtually none to one-third. Most (58.8 percent) of our sample persons were in Medicaid nursing facilities for more than 30 days. Finally, almost one-third of the sample died in hospitals, nursing facilities, and other locations, respectively, although there is also a wide range of percentages across our 10 States.

¹ For example, physician services could have been billed directly by the physician or by outpatient clinics, while outpatient care could include medical services as well those of other types of providers such as therapists.

Table 1

Medicare and Medicaid Dually Eligible Beneficiary Characteristics in the Last Year of Life, Percent Distribution and Range Across the 10-State Sample: 1994-1995

Characteristic	N	Percent of Sample	Ranges of Percent Across States
All Persons	152,019	100.0	—
Age			
Under 65 Years	15,413	10.1	6.9-11.5
65-74 Years	27,013	17.8	14.5-21.3
75-84 Years	47,842	31.5	30.5-34.3
85 Years or Over	61,751	40.6	33.8-48.0
Sex			
Male	50,710	33.4	29.8-38.4
Female	101,309	66.6	61.7-70.2
Race			
White	124,332	81.8	63.9-98.8
Black	22,736	15.0	0.2-34.6
Other	4,951	3.3	0.0-6.7
Days in Nursing Facility			
None	56,235	37.0	22.6-45.6
1-30	6,462	4.3	3.9-4.9
31 or More	89,322	58.8	50.5-72.5
Death Location			
Hospital	47,552	31.3	18.4-44.1
Nursing Home	52,767	34.7	13.6-50.3
Other	51,429	33.8	25.8-46.4

SOURCE: Urban Institute tabulations of data from the Multi-State Dually Eligible Data Files.

Spending for Care

Total spending, by financing sources, provide an initial perspective on the important roles of Medicare and Medicaid in health care provision for dually eligible beneficiaries in the last year of life (Table 2). For the total sample of dually eligible beneficiaries, combined Medicare and Medicaid spending in the last year of life was \$40,534. Medicaid's share, \$16,013, was substantial and constituted about 40 percent of the total.

Combined Medicare and Medicaid spending decreased with increasing age, but this trend was a reflection primarily of spending for Medicare services. Medicaid spending, in fact, increased with age, largely due to increased use of nursing home care. Sex did not substantially differentiate either Medicare or Medicaid spending. Differences by race, on the other hand, were substantial with Black persons and

other races having much higher Medicare spending and lower Medicaid expenditures than White persons. Higher Medicaid costs of White individuals did not totally offset the Medicare cost differences.

Although persons with 31 or more nursing home days had more than \$10,000 lower Medicare costs than beneficiaries with no days in Medicaid nursing facilities, the difference was more than offset by their high (\$22,900) Medicaid costs. Somewhat surprisingly, persons with no nursing facility days had slightly higher Medicaid costs than those with 1-30 days. Individuals who died in hospitals had the highest combined costs relative to other beneficiaries who died in nursing homes or other locations, due primarily to their Medicare costs (\$35,550).

Combined Medicare and Medicaid costs varied considerably across the 10 States in our sample, ranging from \$26,048 in Iowa to \$51,165 in New Jersey. Florida also had

Table 2
Last Year of Life Costs, by Source and Dually Eligible Beneficiary Characteristics: 1994-1995

Characteristic	Medicare	Medicaid	Combined
All Persons	\$24,521	\$16,013	\$40,534
Age			
Under 65 Years	38,204	14,148	52,352
65-74 Years	32,957	11,827	44,784
75-84 Years	25,325	15,404	40,728
85 Years or Over	16,793	18,781	35,574
Sex			
Male	27,886	14,490	42,376
Female	22,837	16,775	39,612
Race			
White	21,996	16,580	38,576
Black	36,358	13,462	49,820
Other	33,573	13,479	47,052
Days in Nursing Facility			
None	30,566	6,287	36,853
1-30	35,361	5,461	40,822
31 or More	19,931	22,900	42,831
Death Location			
Hospital	35,550	14,602	50,151
Nursing Home	17,996	20,729	38,725
Other	21,099	12,395	33,494
State			
Colorado	21,583	17,864	39,446
Florida	31,923	15,317	47,240
Georgia	26,688	12,586	39,274
Iowa	13,386	12,662	26,048
Indiana	20,204	17,521	37,726
Kentucky	21,147	14,666	35,813
Maine	15,444	19,904	35,348
Michigan	24,438	13,815	38,252
New Jersey	28,945	22,220	51,165
Wisconsin	14,499	18,332	32,831

SOURCE: Urban Institute tabulations of data from the Multi-State Dually Eligible Data Files.

relatively high combined costs (\$47,240), while the remaining States averaged in the \$30,000s. Medicare costs ranged from a high of \$31,923 in Florida to a low of \$13,386 in Iowa. Similarly, a two-fold difference existed between the States with the highest (New Jersey, \$22,220) and lowest (Georgia, \$12,586) average Medicaid costs. Although New Jersey and Iowa had high and low average costs, respectively, under each program, we did not find a strong pattern in the combinations of Medicare and Medicaid costs among the other States.

The variation in average Medicare costs among States was greater than that of average Medicaid costs, despite the fact that, unlike Medicare, Medicaid policies for cov-

erage, payment, and eligibility can vary dramatically across States. It is also notable that, despite the overall higher average Medicare costs across the 10 States, Medicaid costs were actually higher than Medicare costs in 2 States. On the other hand, Medicare costs were more than two times the average Medicaid costs in two other States.

Medicare Service Use and Costs

The percent of beneficiaries who were users, and average costs of users, were examined for five categories of Medicare-financed health care: (1) hospital, (2) SNF, (3) home health agency, (4) hospice, and (5) all other services (including physician,

Table 3
Medicare Service Use and Costs of Users in the Last Year of Life, by Characteristics of Dually Eligible Beneficiaries: 1994-1995

Characteristic	Hospital		SNF		HHA		Hospice		Other	
	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount
All Persons	72	\$18,193	32	\$8,014	27	\$6,052	12	\$6,753	98	\$6,629
Age										
Under 65 Years	79	29,087	17	7,946	36	5,473	16	7,116	96	11,293
65-74 Years	79	23,582	31	8,052	38	5,455	16	6,566	97	8,878
75-84 Years	75	17,336	37	8,205	30	6,248	12	6,682	99	6,641
85 Years or Over	63	12,622	32	7,835	19	6,613	9	6,813	99	4,528
Sex										
Male	76	20,282	33	8,114	29	5,372	13	6,805	98	7,433
Female	69	17,041	31	7,960	26	6,428	12	6,724	98	6,229
Race										
White	69	16,373	32	7,969	25	5,862	12	6,866	98	5,902
Black	84	25,032	29	8,168	38	6,737	12	6,314	98	9,874
Other	75	25,338	22	8,731	36	5,987	13	6,006	96	10,111
Days in Nursing Facility										
None	80	21,899	18	5,549	49	6,587	18	7,534	97	7,821
1-30	89	20,974	66	7,533	52	6,146	14	7,879	98	7,635
31 or More	65	15,067	38	8,812	12	4,650	8	5,582	99	5,824
Death Location										
Hospital	98	22,762	28	7,766	35	6,300	1	6,249	99	8,877
Nursing Home	59	13,693	45	8,063	16	5,307	5	4,972	99	5,205
Other	60	15,904	21	8,219	32	6,188	29	7,093	97	6,008

NOTES: SNF is skilled nursing facility. HHA is home health agency. Other services include physician, outpatient, and durable medical equipment.

SOURCE: Urban Institute tabulations of data from the Multi-State Dually Eligible Data Files.

outpatient, and durable medical equipment) (Table 3). Per capita costs, of users and non-users, for the services are presented in Table 4. For the total sample of dually eligible beneficiaries in the last year of life, 72 percent had at least one hospital stay, and the average costs for hospital care was \$18,193. Medicare SNFs were used by 32 percent, and averaged \$8,014. Almost as high a proportion, 27 percent, used Medicare home health services, with an average cost of \$6,052. Hospice care was used by 12 percent of the sample, with an average cost of \$6,753. Finally, virtually all of the individuals, 98 percent, used other Medicare services, such as physician care, with an average cost of \$6,629.

By demographic characteristics, persons over age 85, the oldest old, used hospital care (63 percent) less than their younger counterparts and the costs of hospital care among users (\$12,622) were dramatically

lower than those for younger groups. The oldest-old also used Medicare home health (19 percent) and hospice care (9 percent) less than younger persons. Costs of other Medicare services also decreased with increasing age. Differences in Medicare service use by sex were small, although males were slightly more likely to use specific services and cost slightly more when they were users. White persons used hospital care much less than Black persons (69 versus 84 percent) and the costs among users was lower for White persons than for Black persons and other races. Also, a smaller percentage of White persons used Medicare home health care than other racial groups. While all racial groups had high percentages of persons using physician and other Medicare services, it is notable that the costs among White users for this category of services was markedly lower than those of Black persons and other races.

Table 4
Per Capita Medicare Service Use Costs, by Characteristics of Dually Eligible Beneficiaries in the Last Year of Life: 1994-1995

Characteristic	Hospital	SNF	HHA	Hospice	Other
All Persons	\$13,099	\$2,565	\$1,634	\$810	\$6,497
Age					
Under 65 Years	22,978	1,351	1,970	1,139	10,841
65-74 Years	18,630	2,496	2,073	1,051	8,612
75-84 Years	13,002	3,036	1,874	802	6,575
85 Years or Over	7,952	2,507	1,256	613	4,483
Sex					
Male	15,414	2,678	1,558	885	7,284
Female	11,758	2,468	1,671	807	6,104
Race					
White	11,297	2,550	1,466	824	5,784
Black	21,027	2,369	2,560	758	9,677
Other	19,003	1,921	2,155	781	9,707
Days in Nursing Facility					
None	17,519	999	3,228	1,356	7,586
1-30	18,667	4,972	3,196	1,103	7,482
31 or More	9,793	3,349	558	447	5,765
Death Location					
Hospital	22,307	2,175	2,205	62	8,789
Nursing Home	8,079	3,628	849	249	5,153
Other	9,542	1,726	1,980	2,057	5,827

NOTES: SNF is skilled nursing facility. HHA is home health agency. Other services include physician, outpatient, and durable medical equipment.

SOURCE: Urban Institute tabulations of data from the Multi-State Dually Eligible Data Files.

Individuals with either no days or 30 or fewer days of Medicaid nursing facility care had Medicare service use patterns that were similar to each other, and very different from those with more than 30 days of Medicaid nursing facility care. The former two groups had higher percentages of persons using hospitals, home health, and hospice care, with approximately the same costs for each than did those likely to be long stay Medicaid nursing facility patients. An unusual pattern was for Medicare SNF care, where persons with 1-30 Medicaid nursing facility days had a very high proportion (66 percent) using Medicare SNF care. A possible explanation for this finding is that individuals fell into this category because they had need for a few Medicaid nursing facility days to complement episodes of Medicare SNF stays, which are very short.

Table 3 also presents the patterns of Medicare service use by location of death. People who died in a hospital were significant users of Medicare home health care, and had higher physician and other service costs. As expected, virtually everyone who died in a hospital had Medicare costs for that service. People who died in nursing homes had much lower use of home health care. Finally, people who died in locations other than hospitals and nursing homes were dramatically more likely to have been users of Medicare hospice care.

Medicaid Service Use and Costs

The percent of users and average costs for six categories of Medicaid services are presented in Table 5. Per capita costs of users and non-users of these services are presented in Table 6. Almost one-half of

Table 5

Medicaid Services Use and Costs of Users in the Last Year of Life, by Characteristics of Dually Eligible Beneficiaries: 1994-1995

Characteristic	Hospital		Nursing Facility		Home Care		Hospice		Drugs		Other	
	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount
All Persons	47	\$1,990	63	\$18,106	10	\$3,546	1	\$5,337	88	\$1,741	90	\$1,767
Age												
Under 65 Years	65	4,041	21	14,910	19	4,304	0	5,673	83	3,968	94	3,898
65-74 Years	56	2,163	41	16,190	12	3,153	1	4,685	81	1,871	90	2,099
75-84 Years	47	1,682	66	17,216	10	3,250	1	5,469	87	1,617	89	1,594
85 Years or Over	39	1,324	81	19,299	7	3,633	1	5,407	92	1,281	89	1,193
Sex												
Male	49	2,231	56	16,685	10	3,262	1	5,399	83	2,069	88	1,938
Female	46	1,862	66	18,708	10	3,688	1	5,313	90	1,590	90	1,683
Race												
White	43	1,764	68	18,225	9	3,351	1	5,511	88	1,741	89	1,584
Black	66	2,485	43	17,088	14	3,964	1	4,626	85	1,629	94	2,531
Other	65	3,461	33	18,114	15	4,769	0	2,704	89	2,237	94	2,576
Days in Nursing Facility												
None	58	2,301	0	—	19	4,108	0	6,978	76	2,110	88	2,473
1-30	44	2,608	100	1,008	15	2,904	1	6,660	73	1,241	77	2,060
31 or More	41	1,661	100	19,343	4	1,850	1	4,801	96	1,585	92	1,322
Death Location												
Hospital	71	2,273	49	17,530	13	4,041	0	8,427	87	1,909	93	2,030
Nursing Home	34	1,441	92	19,176	5	2,140	0	4,564	91	1,533	88	1,111
Other	39	2,006	46	16,493	12	3,611	2	5,284	84	1,814	88	2,189

NOTE: Other services include physician, outpatient, and durable medical equipment.

SOURCE: Urban Institute tabulations of data from the Multi-State Dually Eligible Data Files.

Table 6
Per Capita Medicaid Service Use Costs, by Characteristics of Dually Eligible Beneficiaries in the Last Year of Life: 1994-1995

Characteristic	Hospital	SNF	HHA	Hospice	Drugs	Other
All Persons	\$935	\$11,407	\$355	\$53	\$1,532	\$1,590
Age						
Under 65 Years	2,627	3,131	818	24	3,293	3,664
65-74 Years	1,211	6,638	378	47	1,516	1,889
75-84 Years	791	11,363	325	55	1,407	1,419
85 Years or Over	516	15,632	254	54	1,179	1,062
Sex						
Male	1,093	9,344	326	54	1,717	1,705
Female	857	12,347	369	53	1,431	1,515
Race						
White	759	12,393	302	55	1,532	1,410
Black	1,640	7,348	555	46	1,385	2,379
Other	2,250	5,978	715	6	1,991	2,421
Days in Nursing Facility						
None	1,335	—	781	24	1,604	2,176
1-30	1,148	1,008	436	67	906	1,586
31 or More	681	19,343	74	48	1,522	1,216
Death Location						
Hospital	1,614	8,590	525	6	1,661	1,888
Nursing Home	490	17,642	107	6	1,395	978
Other	782	7,587	433	106	1,524	1,926

NOTES: SNF is skilled nursing facility. HHA is home health agency. Other services include physician, outpatient, and durable medical equipment.

SOURCE: Urban Institute tabulation of data from the Multi-State Dually Eligible Data Files.

the deceased dually eligible beneficiaries had Medicaid financing of hospital care in the last year of life, most commonly as coinsurance for Medicare. Almost two-thirds of dually eligible beneficiaries (63 percent) received Medicaid nursing home care, with average costs of \$18,106. This high use of nursing home care is partly explained by the fact that 72 percent of the sample was age 75 years or over. On the other hand, only 10 percent used Medicaid home care and virtually no one had hospice care financed by Medicaid, which reflects the dominance of the Medicare benefit. Medicaid-financed drugs and physician and other health services were used by more than 88 percent of the sample, and each service category averaged about \$1,700.

By demographic characteristics, likelihood of hospital and home care use decreased with increasing age, consistent

with the Medicare patterns in Table 3. In contrast, likelihood of nursing home and home care use increased with age. Small differences existed in the use of drugs and other services, but the under age 65 group had costs for these two categories that were almost twice as high as those for users over age 65. Very small differences by sex exist in the percent of users or average cost of users. Relative to other races, White persons had lower percentages of hospital and home care users, but higher percentages of nursing home residents. Though percentage of users for drugs and other services did not differ much by race, costs of those services were lower, on average, among White persons.

By time spent in Medicaid nursing homes, people who had more than 30 days of nursing facility care had lower percentage use and costs for hospital and Medicaid home care than those with 30 or fewer

Table 7

**Patterns of Medicare- and Medicaid-Financed Supportive Services (Long-Term Care and Hospice)
in the Last Year of Life, by Dually Eligible Beneficiary Characteristics: 1994-1995**

Characteristic	None	Medicare Only	Medicaid Only	Medicare and Medicaid	Medicare and Medicaid Cost ¹
	Percent				
All Persons	13.6	16.1	51.6	18.8	\$16,509
Age					
Under 65 Years	35.0	27.3	20.6	17.2	10,809
65-74 Years	22.5	26.9	30.9	19.7	13,127
75-84 Years	11.6	15.8	51.1	21.5	16,239
85 Years or Over	6.0	8.7	68.7	16.6	18,908
Sex					
Male	18.3	18.0	44.7	19.0	14,891
Female	11.3	15.1	55.0	18.6	17,254
Race					
White	11.8	14.1	55.6	18.6	16,980
Black	20.5	24.8	34.6	20.2	14,242
Other	28.5	26.5	28.1	17.0	13,494
Days in Nursing Facility					
None	36.8	43.4	5.9	13.8	8,488
1-30	—	—	41.4	58.7	5,797
31 or More	—	—	81.1	19.0	20,473
Death Location					
Hospital	20.8	19.1	43.3	16.7	14,540
Nursing Home	2.9	3.5	77.2	16.4	19,485
Other	17.7	26.1	33.0	23.1	7,314

¹ Average cost of users of supportive services, which include Medicare and Medicaid financed home and hospice care and Medicaid financed nursing facility care.

SOURCE: Urban Institute tabulations of data from the Multi-State Dually Eligible Data Files.

days of nursing facility care. As expected, their nursing facility costs (\$19,343) were very high, and virtually all persons in this group (96 percent) received prescription drugs paid by Medicaid. Medicaid service use associated with location of death is generally predictable. Persons who died in hospitals had higher percentages with Medicaid hospital use, while almost everyone who died in a nursing home received nursing home care financed by Medicaid. In addition, individuals who died in nursing homes were much less likely to have received Medicaid-financed home care. People who died in nursing homes without Medicaid costs were likely to be Medicare SNF patients.

Supportive Services Financed by Medicare and Medicaid

A major role for Medicaid in end of life care is coverage of supportive services, particularly nursing home care (Table 7). In addition, although technically not a LTC service, coverage of Medicare's home health services during the early 1990s was so expansive that it is included as a supportive service. The other major Medicare-financed supportive service is hospice care. Medicare SNF care is not included as a supportive service, since it functions as post-hospital extended care with an average length of stay of about 20 days. Under Medicaid, we categorized Medicaid-financed home care, nursing facility care, and hospice care as supportive services.

The vast majority (86 percent) of dually eligible beneficiaries in the last year of life received some form of supportive services financed by either Medicare or Medicaid. Only 16 percent of persons used supportive services financed solely by Medicare and 19 percent used services funded by both Medicare and Medicaid; one-half of the beneficiaries used only Medicaid-financed supportive services, and (not shown) most of them used only nursing facility care.

The proportion of persons with supportive services increased with age, and likely reflects the high and increasing percentage, by age, of persons in this sample who were nursing home residents in the last year of life. Similarly, the percentage of persons using only Medicare-financed supportive services decreased with age, also due largely to the increasing likelihood of Medicaid nursing home care use. A higher proportion of males, in contrast to females, did not receive supportive services from either Medicare or Medicaid. On the other hand, a higher percentage of females used only Medicaid-financed supportive care, probably for nursing homes. The higher percentage of White persons who used Medicaid nursing home care explains much of the differences by race.

Not surprisingly, Medicaid-financed care was very prevalent among persons receiving supportive services in the last year of life. Because our sample was of dually eligible beneficiaries, who are more likely to be more disabled than other Medicare beneficiaries, a very high proportion of them were also nursing home residents. Thus, in this analysis focusing on supportive services, the effect of Medicaid-financed nursing home care is pervasive. On the other hand, Medicare provided support services, either alone or with Medicaid, to about one-third of the population.

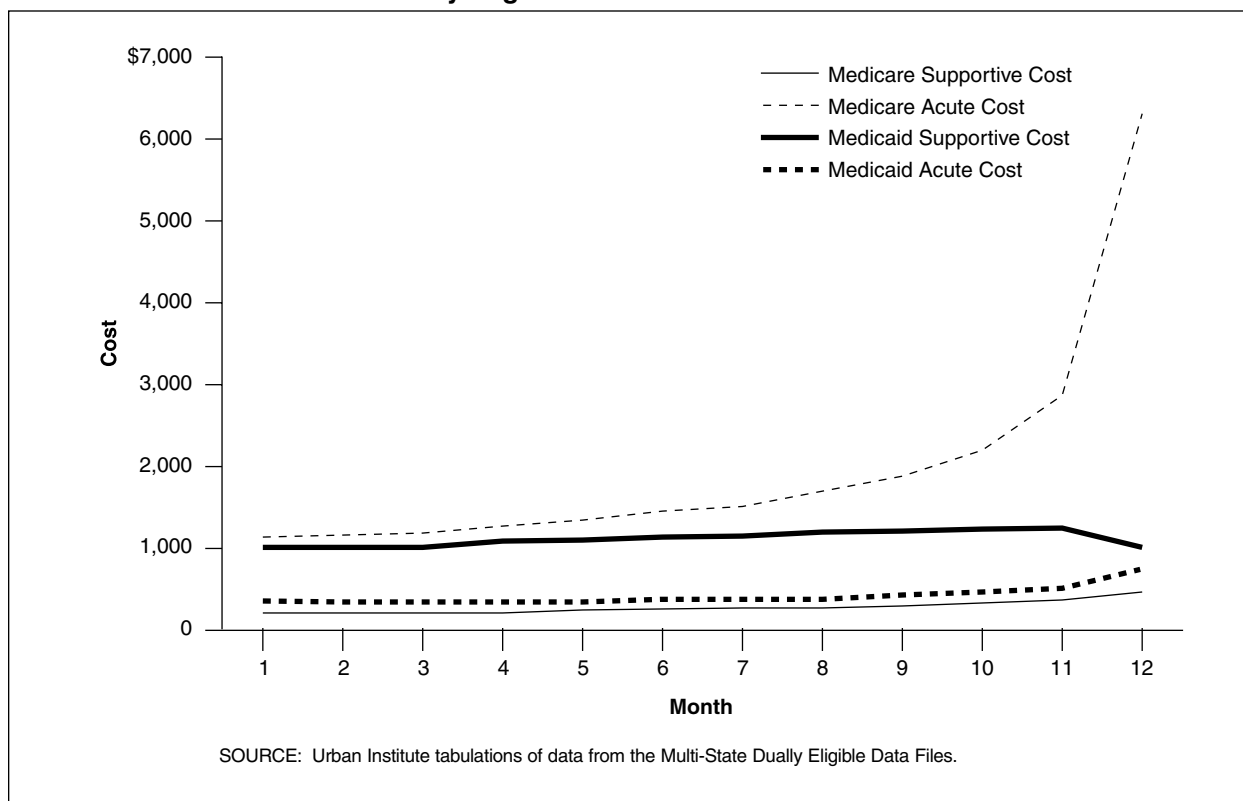
The last column of Table 7 provides a summary measure of combined Medicare and Medicaid costs for supportive services among persons with at least one of the Medicare or Medicaid services. On average for our sample, supportive services costs were \$16,509 in the last year of life. Costs increased with age and were slightly higher for females and White persons. Long stay (i.e., 31 or more nursing facility days) nursing facility residents and persons who died in nursing homes had average costs of approximately \$20,000. These last findings again highlight the important influence of nursing home care on supportive service costs at the end of life.

Trajectories of Service Costs

Average monthly costs of Medicare and Medicaid acute and supportive services are shown in Figure 1. The most striking observation is the dramatic rise in monthly Medicare acute care costs in the last quarter of the year, and particularly in the last month of life. The trajectory of hospital costs (not shown) is the major cause behind the rising Medicare acute care cost pattern. Much less striking, the trajectory of Medicaid acute care costs also rises in the last quarter, largely because Medicaid covers the coinsurance for Medicare-financed services and, therefore, reflects Medicare's trend for acute care.

Supportive services financed by Medicaid are high (about \$1,000 per month) and fairly steady over the 12-month period, largely reflecting the nursing home costs of long-term residents. The slight dip in the last month may be due to more time spent in hospital care at the very end of life. In contrast to its costs for acute care, Medicare supportive services costs are relatively low (about \$200) for each month

Figure 1
Last Year of Life Monthly Costs of Medicare and Medicaid Acute and Supportive Services for Dually Eligible Beneficiaries: 1994-1995



of the last year of life. The upward trend, noticeable in the last quarter, is caused partly by hospice service use.

Net of the heightened Medicare acute costs in the last quarter, Figure 1 indicates that, for most of the last year of life, monthly costs of acute and supportive services combined are shared almost equally by Medicare and Medicaid. Moreover, most of these trends are relatively constant over the entire period. Hence, for dually eligible beneficiaries, both Medicare and Medicaid are critical in providing needed health care services in the entire last year of life.

DISCUSSION

This article examined patterns of Medicare and Medicaid service use and spending for dually eligible beneficiaries in the last year of life. Because Medicare and

Medicaid are the main sources of financing for acute and LTC for this population, our analysis provides a relatively full description of health care services used by dually eligible beneficiaries. Our study used the earlier CMS/Mathematica data development project to create detailed person level files on dually eligible decedents in 10 States for 1995 and 1996.

Our findings on acute care use and beneficiary characteristics of the dually eligible population are consistent with prior research on the last year of life. For example, Medicare costs declined with increasing age, and the oldest-old (85+) decedents are less likely to be hospitalized and have lower costs per hospital stay than younger persons. These results suggest that older decedents do not use disproportionately more acute care services at the end of life, so policy concern about potentially wasteful

acute care spending for persons in the last year of life is likely overstated. On the other hand, since the death of a younger person is considered more unusual and more tragic, the health care system may be more willing to spend more money on aggressive treatment of dually eligible beneficiaries under the age of 65. Consistent with this notion, under age 65 decedents had the highest combined Medicare and Medicaid costs.

Among dually eligible beneficiaries in the last year of life, LTC costs are a large proportion of total Medicare and Medicaid spending and they increase with increasing age of beneficiaries. These results highlight the importance of accounting for LTC services in assessing the overall costs of decedents in the last year of life. For example, while dually eligible decedents age 85 or over have the lowest Medicare costs, they have the highest supportive services costs. At the same time, while Medicare is generally viewed as the primary financing source for acute care services, and Medicaid for LTC, Medicare's importance in providing supportive services cannot be overlooked in policy deliberations. For example, changes in the Medicare home health reimbursement policies, resulting from provisions in the 1997 Balanced Budget Act, substantially reduced utilization of that benefit and probably its role in end-of-life care (Bishop, Kerwin, and Wallack, 1999).

We found that dually eligible Black beneficiaries had patterns of health care that were different from those of White beneficiaries. A large portion of the differences was associated with Medicare acute care use, particularly likelihood of hospital use and costs of hospital care per user. The other major difference was that Black and other beneficiaries did not use Medicaid-financed nursing facility care at nearly the same rate as White beneficiaries. While 68 percent of White beneficiaries were

in Medicaid nursing facilities some time during the last year of life, only about 40 percent of the minority races did so. Some of the difference was offset by the higher use of Medicare-financed home health care by Black and other beneficiaries. Possible explanations include differences in informal care networks, discriminatory admission barriers to facilities, historical use of hospitals and home care versus nursing home care, and personal preferences (Falcone and Broyles, 1994; Morrow-Howell and Chadiha, 1996).

Hospital care is an important cause of heightened costs in the last year of life and particularly in the last month of life. Findings from this analysis indicated that persons who were long-stay residents of nursing facilities had lower likelihood of using hospitals during the year and lower average costs when they did. For some of these beneficiaries, it is plausible that spending on Medicaid supportive services resulted in savings for Medicare acute care services. Although our descriptive findings did not address the extent of these potential savings, or the circumstances under which they could occur, they do suggest that further research in this area might be productive in exploring new strategies for efficiently meeting the health care needs of dually eligible persons.

It is important to point out limitations with this study as well as possible avenues for future research. First, the sample was of persons from 10 States and was, therefore, not nationally representative, although these data do represent States with a substantial share of the Medicare population. Second, data is from 1995 and 1996. However, patterns of care are not likely to have changed dramatically since that time. Third, the scope of this study was limited to individuals at the end of life, and we did not make comparisons with survivors in the same year. Fourth,

the Medicare and Medicaid enrollment and claims data that we used in this study contain relatively few personal characteristics of beneficiaries. Other characteristics, such as disability status and strength of informal care networks, would be very useful for interpreting the service use patterns that we observed.² Although this limitation is an intractable problem when using Medicare and Medicaid administrative data, it is counterbalanced by the completeness and accuracy of the utilization and expenditure data.

In conclusion, because of the high costs of their care, Medicare and Medicaid dually eligible beneficiaries deserve substantial public policy attention. A major finding in this study is that, for dually eligible persons in the last year of life, a large proportion of total health care costs is spent for LTC services. Because Medicaid is the main source of funding for LTC services, any changes in Medicaid coverage or payment policies will have a direct impact on the services used heavily by persons at the end of life. Moreover, to the extent that substitution between Medicare and Medicaid exists, changes in Medicaid policies are likely to indirectly affect the provision of Medicare-funded services. Likewise, changes in Medicare policies affecting this type of care are likely to have an impact on Medicaid coverage. It is critical, therefore, that policy deliberations about care provision for dually eligible beneficiaries include concurrent consideration of acute and LTC, as well as the interaction of the two programs that finance them.

² It would be possible to link patient assessment data, such as from the nursing home minimum data set with more recent claims data to link to.

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