

Cost Savings Associated with Expanded Hospice Use in Medicare

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Dear Editor:

Despite mounting evidence that hospice provides high-value, high-quality care, many eligible Medicare beneficiaries do not enroll, and lengths of hospice stay remain short. Policymakers have considered changes to Medicare policies to encourage hospice use, but there are persistent concerns about the impact of expanding services on the long-term financial solvency of the program. In this study we simulated impact of increased hospice use among Medicare beneficiaries with poor-prognosis cancer on overall Medicare spending.

Methods

Using previously described methods,¹ we identified 18,165 fee-for-service Medicare beneficiaries who died in 2011 with a diagnosis of poor-prognosis cancer and matched them with similar patients who died without hospice. We constructed a regression model to estimate *difference in weekly costs* between matched hospice and nonhospice beneficiaries, as a function of age, sex, HRR, comorbidity, and time from diagnosis to death. Using coefficients from this model we estimated costs for all beneficiaries with poor-prognosis cancers (including those who were not matched, $n = 86,851$) at the beneficiary-week level, under hypothetical scenarios of increased hospice uptake. Specifically, we varied fraction of beneficiaries enrolled in hospice (assigning a random sample of $f = 20\%, 40\%, \dots, 100\%$ of all beneficiaries to hospice) and

length of hospice stay (setting length to $w = 2, 4, 8, \dots, 24$ weeks for all those assigned to hospice). We summed these differences to estimate total savings under each scenario among patients with poor-prognosis cancer in the 20% sample, and multiplied by five to create national estimates.

Results

Estimated annual cost savings nationally ranged from \$316 million (20% uptake, 4-week duration) to \$2.43 billion (100% uptake, 24-week duration) (see Table 1). Currently, 60% of Medicare beneficiaries with poor-prognosis cancer receive hospice care, with average stay of under two weeks.¹ Broadening enrollment to 80% of all patients, the fraction who express preferences for end-of-life care directed at symptom management² would generate savings of \$940 million. Medicare guidelines allow six months of hospice benefit, but physician opinion³ and literature on disability trajectories⁴ suggest that three months would be a reasonable duration. At current levels of 60% hospice uptake, extending hospice length to 12 weeks saves \$1.34 billion annually. Together, increased uptake (80%) and duration (12 weeks) would save \$1.79 billion.

Discussion

Under realistic scenarios of expanded hospice use for Medicare beneficiaries with poor-prognosis cancer, the program could save \$1.79 billion annually. Clinical leaders

TABLE 1. ANNUAL COST SAVINGS FROM INCREASED HOSPICE UPTAKE (MILLIONS OF DOLLARS)^a

Hospice uptake (%)	Duration of hospice stay (weeks)						
	2	4	8	12	16	20	24
20	237	316	411	446	466	484	487
40	469	630	825	890	935	965	970
60	705	940	1235	1340	1395	1445	1455
80	940	1260	1645	1785	1860	1925	1940
100	1175	1570	2060	2230	2330	2410	2430

^aEach cell shows the annual cost savings realized in a hypothetical counterfactual scenario with a given level of hospice uptake for a given number of weeks, based on the modeled differences in cost from the matched cohort.

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seeking to improve care for terminally ill patients and policy makers seeking to reduce low-value health spending may find common ground in supporting increased uptake and duration of hospice services.

Focusing on a population with poor-prognosis cancer had advantages and limitations. Restricting our analysis allowed us to focus on patients for whom hospice would be considered standard of care, and for whom reasonable estimates of ideal uptake and length of hospice stay were available. Cancer represents only a fraction of all individuals who receive hospice care—albeit the largest single group—and these results cannot be generalized to other populations. We focused exclusively on cost, and were unable to accurately account for the quality of hospice care received.

Author Disclosure Statement

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References

1. Obermeyer Z, Makar M, Abujaber S, et al.: Association between the Medicare hospice benefit and health care utilization and costs for patients with poor-prognosis cancer. *JAMA* 2014;312:1888–1896.
2. Steinhauer KE, Christakis NA, Clipp EC, et al.: Factors considered important at the end of life by patients, family, physicians, and other care providers. *JAMA* 2000;284:2476–2482.
3. Glare P, Christakis NA: *Prognosis in Advanced Cancer*. Oxford: Oxford University Press, 2008.
4. Gill TM, Gahbauer EA, Han L, Allore HG: Trajectories of disability in the last year of life. *N Engl J Med* 2010;362:1173–1180.

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