Health Status Plays a Larger Role in Geographical Differences in Medicare Spending Than Previously Thought

Zuckerman S, Timothy Waidmann T, Berenson R, Hadley J. Clarifying sources of geographic differences in Medicare spending. N Engl J Med 2010 May 12. Epub ahead of print.

Study Overview

Objective. To examine underlying sources of geographic differences in Medicare spending.

Design. Retrospective cohort study.

Setting and participants. This study used the Medicare Current Beneficiaries Survey (MCBS) from 2000 to 2002. Elderly respondents (> 64 years) who were not institutionalized at the time of the baseline interview and who had traditional (fee-for-service) Medicare coverage for the first year in the survey were included.

Main outcome measures. The main outcome of interest was annual Medicare spending per beneficiary. Spending data were expressed in 2002 U.S. dollars, adjusted for cross-sectional price differences by using the Medicare prospective payment system hospital-wage index. Geographic areas were grouped into quintiles on the basis of Medicare spending per beneficiary from 2000–2002, with each quintile representing one-fifth of the weighted population represented by the MCBS. Determinants of Medicare spending were grouped into 5 categories: (1) demographic characteristics (age, sex, race/ethnicity, and urban vs. rural residence); (2) baseline health measures (self-reported general health, smoking status, body mass index, and previous diagnoses of diabetes or hypertension); (3) other health variables (other measures of baseline health including previous diagnosis of myocardial infarction, coronary heart disease, another heart problem, stroke, or any nonskin cancer; changes in baseline health including death during the year or new diagnosis of diabetes, hypertension, myocardial infarction, coronary heart disease, another heart problem, stroke, or any nonskin cancer; and whether the interview was completed by a proxy, used as an indirect measure of baseline health, and functional status); (4) family income and supplementary insurance; and (5) area level supply of medical resources (number of hospital beds and physicians per 1000 elderly population, percentage of physicians in primary care, number of resident physicians per bed, and whether or not the nearest hospital with ≥ 100 beds was a teaching hospital).

Main results. Mean Medicare spending per beneficiary ranged from $4721 in quintile 1 to $7183 in quintile 5, a difference of 52%. Adjusting for demographic characteristics and baseline health measures reduced the magnitude of the unexplained differences between quintiles 1 and 5 from 52% to 40%. Adding the expanded set of other health variables further reduced the magnitude of difference between quintiles 1 and 5 to 33%. The addition of data on baseline health and other health variables reduced the percentage of spending difference between quintiles 1 and 5 that was unexplained from 92% (in the model including demographic variables only) to 63%, suggesting the health measures account for 29% of the spending difference. Including information on family income, supplementary insurance, and area

(continued on page 297)

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(continued from page 294)

level supply of medical resources had little additional effect on the magnitudes of unexplained geographic differences. In the fully adjusted model including all 5 categories of explanatory variables, unexplained geographic differences between quintiles 1 and 5 remained at 33%.

Conclusion. After adjustment for demographic variables, baseline health characteristics, and changes in health status, geographic differences in annual Medicare spending per beneficiary between the highest and lowest quintiles was reduced from 52% to 33%. Health status accounted for 29% of the unadjusted geographic difference in per-beneficiary spending.

Commentary

Significant regional differences in Medicare spending without associated differences in health care quality have been the subject of intense scrutiny by researchers and policymakers [1–3]. Recent research has suggested that demographic characteristics and health status explain only a small portion of geographic spending differences, and that differences in the supply of medical services between areas with the highest and lowest spending may be far more important [4].

This study adds to our understanding of the reasons behind geographic differences in health care spending by adding 3 sets of factors not included in previous models: additional measures of health, supplementary insurance coverage, and area-level measures of the supply of health care resources. While health status accounted for only 18% of regional spending differences in a recent analysis by Sutherland et al [4], the current study by Zuckerman and colleagues found that health status accounted for 29% of geographic differences in per-beneficiary spending. Including area-level measures of the supply of health care resources did not contribute to observed differences in this study. The percentage of spending differences that remained unexplained, while somewhat reduced compared with previous studies, was still significant in the current analysis at over 60%.

Efforts to understand regional difference in Medicare spending are critical to inform Medicare payment policies. Even small differences translate to significant costs. Thus, the fact that estimates of the effect of health status on spending differences changed from 18% to 29% with the inclusion of additional health status measures signals a need for caution before basing policy changes on such data. Clearly, many potential sources of spending differences are difficult to measure and therefore not included in this or other recent analyses. For example, the study does not capture the severity of illness or the presence of multiple chronic conditions. The authors also point to differences in practice organization, market structure, profit-seeking behavior by providers, rates of inappropriate Medicare payment, and beneficiary preferences as possible sources of unexplained spending differences.

Several limitations should be considered in the interpretation of these results. First, as the authors note, measures of health status could be improved upon. The inclusion of additional or more detailed measures of illness burden and severity may significantly alter these results. Second, multiple potential sources of spending differences are not included in the current analysis, either because they are difficult to measure or because they have not yet been identified. Third, the authors were unable to adjust for a known source of variations in Medicare payments: additional payments to teaching hospitals and hospitals that care for a disproportionate share of indigent patients. Adjustment for such payments may explain a significant percentage of regional differences that remain unaccounted for in this study.

Applications for Clinical Practice

Differences in health status may account for a larger percentage of regional differences in Medicare spending than previously thought. Further research is needed to fully understand geographic spending variations. Policies that focus on area-level spending but fail to adequately account for health differences may inappropriately reward or penalize certain areas.

—Review by Yael Schenker, MD

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