Using Race as a Case-Mix Adjustment Factor in a Renal Dialysis Payment System: Potential and Pitfalls

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Background: Racial disparities in health care are widespread in the United States. Identifying contributing factors may improve care for underserved minorities. To the extent that differential utilization of services, based on need or biological effect, contributes to outcome disparities, prospective payment systems may require inclusion of race to minimize these adverse effects. This research determines whether costs associated with end-stage renal disease (ESRD) care varied by race and whether this variance affected payments to dialysis facilities.

Study Design: We compared the classification of race across Medicare databases and investigated differences in cost of care for long-term dialysis patients by race.

Setting & Participants: Medicare ESRD database including 890,776 patient-years in 2004-2006.

Predictors: Patient race and ethnicity.

Outcomes: Costs associated with ESRD care and estimated payments to dialysis facilities under a prospective payment system.

Results: There were inconsistencies in race and ethnicity classification; however, there was significant agreement for classification of black and nonblack race across databases. In predictive models evaluating the cost of outpatient dialysis care for Medicare patients, race is a significant predictor of cost, particularly for cost of separately billed injectable medications used in dialysis. Overall, black patients had 9% higher costs than nonblack patients. In a model that did not adjust for race, other patient characteristics accounted for only 31% of this difference.

Limitations: Lack of information about biological causes of the link between race and cost.

Conclusions: There is a significant racial difference in the cost of providing dialysis care that is not accounted for by other factors that may be used to adjust payments. This difference has the potential to affect the delivery of care to certain populations. Of note, inclusion of race into a prospective payment system will require better understanding of biological differences in bone and anemia outcomes, as well as effects of inclusion on self-reported race.

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INDEX WORDS: End-stage renal disease; dialysis; prospective payment system; race.

The health services research and clinical literature has widely documented the existence of racial disparities in health care in the United States. This literature has been summarized in an Institute of Medicine report.[1] In addition to disparities in care received, race has been related in numerous cases to health care outcomes across various disease and health disciplines.[2-4] There also is evidence that these outcomes are associated with higher health care costs.[3,5]

Black race is associated with a significant increased likelihood of developing end-stage renal disease (ESRD). Although black patients have lower mortality rates on dialysis therapy than their nonblack counterparts,[6] there is evidence that in some respects, black patients face a greater burden of disease. Black patients are more likely to be anemic than their nonblack counterparts, and their anemia more often is intractable. Blacks also have higher erythropoiesis-stimulating agent (ESA) use than other patients.[7,8] Additionally, studies have identified ra-

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cial differences in parathyroid hormone (PTH) concentration and the biological effect of this hormone on ESRD-related bone disease.[9] These relationships create the potential for race to affect the costs of dialysis.

Despite documented relationships among race and health status and cost, payment systems that reimburse health providers typically do not adjust for race. This study shows the application of a racial adjustment to a new payment system under development for outpatient dialysis services. This analysis includes challenges in appropriately classifying patients and determining costs attributable to racial differences, as well as potential explanations for why cost differentials exist. These data can be used to inform a decision about whether to include race in future payment models.

The issue of inclusion of race as a payment adjuster in the dialysis payment system has already sparked controversy in political and industry circles. In 2007, the Subcommittee on Health of the Committee on Ways and Means in the US House of Representatives received testimony regarding the potential for an expanded ESRD prospective payment system to create racial disparities in ESRD anemia outcomes.[10] In the recently concluded public comment period, criticism of the exclusion of race in proposed payment rules issued in September 2009 by the Centers for Medicare & Medicaid Services (CMS) has come from both patient advocacy organizations and large dialysis providers.[11,12]

The current Medicare payment system for outpatient kidney dialysis facilities is a mixed payment system. It includes a bundled prospective payment, often referred to as the composite rate, for dialysis treatment and specified related services. Other services, including certain injectable medications (such as ESAs, vitamin D analogues, and iron), laboratory tests not covered by the composite rate, and several miscellaneous supplies and services, are billed separately on a fee-for-service basis. Effective January 1, 2011, the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA), Public Law 110-275,[13] requires that CMS implement a new payment system based on an expanded bundle of outpatient dialysis-related services. The new bundle is to include most or all currently separately billed items in addition to services currently included in the composite rate.

MIPPA requires payment adjustments based on patient characteristics that affect cost of care. Appropriate adjustments help ensure access to care for individuals who are likely to face above-average costs and would provide more equitable payment to facilities caring for a disproportionate share of such patients. For example, payments for the more limited composite rate bundle of services currently are adjusted for patient age, body surface area, and low body mass index. More recent research underlying a recent Report to Congress on the expanded bundle examined numerous other patient characteristics that may impact on the cost of dialysis.[14,15] Several characteristics were associated with significantly higher costs and were included in the recently proposed case-mix–adjusted payment model. These included, but were not limited to, human immunodeficiency virus (HIV) infection/AIDS, recent septicemia, recent gastrointestinal bleed, and previous diagnosis of a malignancy.[16] Race was not included as a case-mix adjuster. To the extent that costs differ by race in ways not captured by these other patient characteristics, the access to care or quality of care delivered to black patients may be affected.

METHODS

To evaluate a possible relationship between race and dialysis costs, we assessed the quality of the available data for race, the ability of race to predict costs, and the extent to which other case-mix adjusters capture cost differences by race when race is not included in the payment model.

Because race and ethnicity are subjective socially constructed characteristics, it was necessary to ensure there was a consistent way to classify patients. To evaluate consistency in reporting of race, we compared race categorization from 2 separate Medicare sources, the ESRD Medical Evidence Report (CMS Form 2728) and the Medicare enrollment database. The CMS Form 2728 race designation is based on provider reports and was used to specify 4 race categories (white, black or African American, American Indian/Alaska Native, and Asian/Native Hawaiian or other Pacific Islander [hereafter referred to as Asian/Pacific Islander]), and a separate designation for Hispanic ethnicity. The enrollment database race designation is derived from patient self-reports, sometimes modified by administrative rules. The enrollment database race categories are somewhat different, and Hispanic ethnicity is treated as a distinct racial category rather than a separate variable. We compared the 2 sources for consistency of patient classification.

Several analyses then were performed to evaluate the relationship between race and cost of dialysis and the impli-