Racial and Ethnic Disparities in End Stage Renal Disease: Access Failure

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US Public Law 92-603, signed by President Richard Nixon in 1972, established ESRD as the only medical condition to be covered by Medicare irrespective of age or lack of qualifying disability. Despite the resultant, near universal access to treatment for ESRD, marked differences in the incidence and treatment outcomes of ESRD according to race, ethnicity, and socioeconomic status have troubled the nephrology community for decades (1–3). In the United States, ESRD disproportionately afflicts members of racial and ethnic minority groups, particularly those from impoverished communities (1,4). Numerous studies have reported marked differences in clinical measures at dialysis initiation, such as lower mean hemoglobin and serum albumin concentrations, less frequent use of erythropoietin-stimulating agents, and more frequent use of hemodialysis catheters among racial-ethnic minorities compared with non-Hispanic whites (5–7). Collectively, these studies suggest the presence of differential access to high-quality nephrology care prior to initiating renal replacement therapy.

In this issue of CJASN, Arce et al. (8) leverage data from the Centers of Medicare and Medicaid 2005 Medical Evidence Form (form 2728-U3) to examine ethnic differences in prevalent vascular access among adults initiating hemodialysis in the United States during 2005–2008. The 2005 Medical Evidence Form contains additional field codes to indicate the presence and duration of nephrology care prior to, and the type of vascular access used at, dialysis initiation. The investigators examined individual patient-level data from the US Renal Data System (USRDS) to estimate prevalent use of different types of vascular access at dialysis initiation among 321,996 incident adult hemodialysis patients. In unadjusted analysis, the investigators found that Hispanic patients were 15% less likely to initiate hemodialysis with an arteriovenous fistula or graft compared non-Hispanic patients. This lower likelihood of initiating hemodialysis with an arteriovenous fistula or graft among Hispanic patients was attenuated (i.e., the risk estimate moved closer to the null value) after further adjustment for the presence of predialysis nephrology care in a model that already included individual-level demographic and clinical variables (8). The authors concluded that differences in access to predialysis nephrology care partly mediated the observed ethnic differences in vascular access use—results that align with prior studies in ESRD.

Arce et al. (8) highlight the influential role of timely nephrology care, which has been linked not only to vascular access use but also to subsequent rates of survival, hospitalization, and kidney transplantation. Several recent studies have reported striking variations in predialysis nephrology care when examined using area-based proxies of spatial clustering, contextual socioeconomic status, and neighborhood racial composition (9,10). In a national, random sample of American hemodialysis patients, Hopson et al. (11) observed a significant association between ESRD network and vascular access use independent of the effects of race and sex. Whereas the variation in vascular access use may partly link to individual-level determinants such as patient preferences, educational attainment, and vascular comorbidities, other system-level factors including geographic differences in provider concentration, degree of urbanization, healthcare spending, and use are likely operative (12). In addition, the United States remains a relatively segregated society based largely on race, ethnicity, and socioeconomic status: data from the US Census indicate that most racial and ethnic minority groups tend to cluster in adjacent Census tracts in distinct areas of the United States (13). As such, the care of some racial minority groups in the United States appears to be highly concentrated in the hands of relatively few healthcare providers (14,15). Although data on healthcare delivery to Hispanic Americans are sparse, given the clustering of this diverse population in certain areas of the United States, it seems plausible that similar patterns of healthcare concentration might exist.

Although its effects were muted in the study analyses, another key mediator of timely access to predialysis nephrology care was likely the presence, duration, and type of health insurance coverage (16). The Medicare ESRD program provides health insurance coverage for the vast majority of patients who require treatment for ESRD, but its benefits do not extend to individuals with earlier stages of CKD. Nearly half of Hispanic patients in the study by Arce et al. (8) were younger than 60—patients who in the absence of disability would not qualify for federal health insurance through Medicare. Thus, in earlier stages of CKD, those who lacked health coverage under private or employer group plans would have likely been uninsured or enrolled in Medicaid, which is the joint federal and state health insurance coverage for persons of severely limited financial

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means. While we have learned much about health outcomes of CKD using data from insured populations (5), we have yet to fully elucidate the impact of CKD on more vulnerable populations such as those receiving care in the healthcare safety net (17). This “blind spot” in CKD surveillance has likely limited our ability to adequately address racial-ethnic disparities in ESRD incidence and in access to predialysis nephrology care.

On the other hand, data from the Centers of Medicaid and Medicare’s 2000 ESRD Clinical Performance Measures Project suggest that racial-ethnic differences in other outcomes such as anemia, vascular access, and nutritional measures substantially decline, and in some instances reverse, after dialysis initiation (18,19). Such data are encouraging and indicate that some disparities may be at least partly modifiable with the provision of adequate health insurance coverage and a regular source of medical care (along with the wraparound services that accompany most dialysis units). Extending such access to individuals with less advanced disease could theoretically lead to slower progression of CKD and, for those who continue to progress, better preparation for renal replacement therapy. Furthermore, while modifying socioeconomic status is regrettably challenging, systematic programs to identify and manage risk factors for ESRD within high-risk, vulnerable populations such as American Indians and Alaska Natives have successfully translated into declining incidence of ESRD in these racial groups, even within impoverished communities (1,20).

The study by Arce et al. (8) also has several important limitations. As with any study that relies on administrative data, the determination of race or ethnicity has the potential for misclassification bias. Access to self-reported race and ethnicity data might have improved the specificity of ethnicity ascertainment, but unfortunately these data are not available through the USRDS. There is also the possibility of bias from missing data including key intermediates, such as the presence and duration of predialysis care based on the Medical Evidence Form. More than half of Hispanics and nearly 44% of non-Hispanics either did not access or lacked an indicator code for the presence and duration of predialysis nephrology care. Furthermore, approximately 35% of non-Hispanic subjects included in the analysis were black—a racial group that has historically experienced poorer health outcomes than patients of non-Hispanic white descent. Use of a heterogeneous referent group likely attenuated the influence of socioeconomic determinants such as health insurance coverage and employment status on the relationship of Hispanic ethnicity and vascular access use. Additional analyses examining the associations of ethnicity, vascular access, and predialysis care in a subgroup with more homogeneous health insurance coverage, such as in persons older than 66 at dialysis initiation, might also have been informative (21). Finally, because of the substantial heterogeneity of Hispanic populations, the inability to further subcategorize these groups may have masked health disparities among members of more vulnerable groups such as Puerto Ricans, where outcomes have historically been poorer compared with other Hispanic groups.

Despite these modest limitations, the study serves as a timely reminder of the influence of predialysis nephrology care on disparities in important outcomes at dialysis initiation. Although the impending expansion of health insurance coverage (albeit of different types) serves as a fundamental step toward more equitable healthcare access, we will need to address a myriad of other factors to meet the objectives of Healthy People 2020. Healthcare provider shortages in many areas of the country, particularly among the urban and rural poor, undoubtedly contribute to differential access to high-quality general medical and nephrology care. Given the subdued influence of individual-level factors in this study, future studies might examine the impact of provider-level factors such as nephrology care concentration, and practice size on differential outcomes leading up to ESRD. Similarly, examining differences in healthcare structure at the level of the city, county, or state, including variations in Medicaid eligibility and CKD care delivery models, might provide further insight on how best to improve both access to, and delivery of, high-quality predialysis care to all Americans.

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Disclosures
None.

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