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## Can Dialysis Withdrawal Explain Why White Patients Have Worse Survival than Black Patients?

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“He Who Has Health Has Hope and He Who Has Hope Has Everything” (Thomas Carlyle, 1795–1881)

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Persons with advanced CKD are unique in that even if their disease progresses, they may continue to live through the innovations of dialysis and/or transplantation. Thus, there is a sense of hope for many, even as their health may be declining. Hope for a transplant and hope that with dialysis they may extend their lives and continue to enjoy friends and family. There is still the reality that those receiving maintenance dialysis treatments have a markedly shortened life span. Several studies have reported a lower risk for death among self-reported racial and ethnic minorities compared with their non-Hispanic white peers, especially among black people older than 50 years who exhibit the greatest survival compared with their aged matched counterparts. The reason(s) for this finding remains elusive but appears to partly relate to multiple factors. Both social and biologic factors may contribute to the more frequent development and/or progression of many common chronic conditions (such as CKD) by race and ethnicity.<sup>1</sup> Most studies have controlled for a variety of potential confounding factors including but not limited to comorbid conditions, sociodemographic factors, transplantation rates, dialysis dose, anemia status/treatment, bone and mineral metabolism status/treatment, prevalence of arterial venous fistulas versus indwelling catheters, and even markers of nutritional status and inflammation—in particular more muscle mass in black Americans<sup>2–4</sup> (Table 1). Other considerations include a potential survival bias with sicker and/or lower-resource minority patients suffering from increased mortality during the pre-ESKD period. Indeed, analyses of the Third National Health and Nutrition Examination Survey showed a significantly higher age- and gender-adjusted hazard ratio (1.78 for death for black people versus white people with CKD younger than 65 years), whereas there was no difference

in those 65 years or older. Further adjustment for CKD stage and cardiovascular risk factors did not materially change the results, but the increased mortality risk was attenuated after further adjustments for socioeconomic status (SES).<sup>5</sup> This suggests the survival differential found in younger minorities with CKD can be attributed to a lower SES and not an independent role of race or ethnicity, although race or ethnicity in this country is systematically and strongly linked to SES.<sup>6</sup> However, the apparent survival advantage among black over white patients receiving dialysis treatments may be due to a subset of white people with more severe comorbid conditions transitioning onto dialysis.<sup>6</sup>

In this issue of *JASN*, Agunbiade *et al.*<sup>7</sup> examined survival rates in nearly 150,000 patients on dialysis after hospitalization for four serious conditions and found that the greater survival rates noted for minorities could be accounted for, in large part, by higher rates of discontinuation of dialysis therapy by white patients. They further posit that their findings may be due to racial and ethnic differences in social support and/or certain health beliefs such as religiosity and spirituality, which may all affect the likelihood of choosing to discontinue dialysis or not. However, it is also important to note that considering discontinuation of dialysis as independent from mortality is fraught with another problem (in particular in black patients older than 50 years) because, in patients receiving dialysis treatments, discontinuation is a state of unwillingness to live and resignation to die. This is in contrast to how transplantation may be handled in examining dialysis-related survival, which is that ending of dialysis is associated with a marked increased likelihood of survival.

The phenomena of increased survival among minority patients on dialysis is not limited to the United States and

**Table 1.** Factors that may contribute to racial and ethnic differences in dialysis survival

Commonly Assessed or Potentially Assessable	Less Commonly Assessed or Difficult to Assess
Differences in pre-ESKD comorbidities leading to selective survivorship	Differences in rate of early discontinuation of dialysis
Differences in response to vitamin D and anemia-related treatments	Differences in life expectations such that ESKD may lead to differing degrees of hopelessness by race and ethnicity
Differences in response to increased inflammatory profile	Differences in APOL1 leading to ESKD with less severe systemic disease
Differences in rate of kidney transplantation	Differences in change of comorbidities post-initiation of dialysis
Differences in pre-ESKD care that may lead to survivor bias	Differences in religious/spiritual practices and beliefs that may affect one's will to live and continue on dialysis
Differences in cardiovascular risk profile with traditionally maladaptive behaviors (e.g., overeating, substance abuse) to attenuate depression and stress, which may be untoward long term but may provide short-term protection from markedly abbreviated life expectancy (reverse epidemiology of cardiovascular-disease risk)	Differences in overall lifetime access to/receipt of quality care for many common chronic conditions that may lead to differential mortality during the phase of CKD and a survivor bias
Differences in response to neighborhood and/or individual socioeconomic status	Differences in lifetime exposures to excess stress (e.g., discrimination, institutional racism, low socioeconomic status) that may lead to acute and chronic neurohormonal, physiologic, and genomic changes that may affect health status in unmeasured ways among survivors
Differences in social support and/or the openness to receive it	Differences in environmental exposure to heavy metals, small particulate matter, etc. due to residential segregation and classism

has been reported in several other countries.<sup>8</sup> Thus it would be interesting to see if possible contributors such as differences in major pre-ESKD comorbidities or earlier discontinuation of dialysis is more common among majority groups in other settings and might represent a universal finding, or if some of these observations are unique to America. The biologic effects of racism have been reported to be mediated through stress and the associated acute and chronic neurohormonal, physiologic, and genomic changes that affect health status.<sup>1</sup> This is likely to occur in nondominant groups in other nations as well, where there is overt racism toward nondominant racial or ethnic groups.

The cause of increased rates of early discontinuation of dialysis among white relative to black patients on dialysis needs further exploration. Expectation of financial/job security and a lower standard of living than their parents, coupled with a constantly reinforced message through media of an expectation of having an even better quality of life has contributed to a sense of loss and despair for many white Americans, thought to contribute to a recent increase in premature morbidity and mortality.<sup>9</sup> Such beliefs and sense of despair or loss of hope may also influence the earlier desire to discontinue dialysis reported by Agunbiade *et al.*,<sup>7</sup> in comparison with populations that have no such expectations. Indeed it has been speculated that black patients on dialysis and their families have superior coping mechanisms due to exposure to other adverse socioeconomic stressors throughout life, including dealing with inequality and discrimination.<sup>10</sup> It is possible, although not yet equivocally proven, that hardship in life allows better perception of hope in the face of difficult circumstances. To that end, black patients on dialysis and their family members may be less willing than their white peers to stop dialysis upon each hospitalization for dialysis and nondialysis-related events. Also, culturally sensitive palliative care may not be consistently available to black patients on dialysis. Notwithstanding the above speculations, the issue of racial and ethnic differences in dialysis survival is rather complex and dynamic and many factors may be changing over time. However, a better understanding of these factors can lead to important insights into potential treatments that should be applicable to all groups.

## DISCLOSURES

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See related article, “Racial/Ethnic Differences in Dialysis Discontinuation and Survival after Hospitalization for Serious Conditions among Patients on Maintenance Dialysis,” on pages 149–160.

## Pilot Trials in Nephrology: Establishing a BASE for Large-Scale Randomized Trials

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