

# Ethnic Disparities in the Prevalence and Treatment of Kidney Disease

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**Introduction** Chronic kidney disease (CKD) has recently become recognized as an emerging public health problem. Indeed, CKD is 1 of the 28 focus areas of Healthy People 2010, the nation's blueprint to increase quality and years of healthy life and eliminate health disparities.<sup>1</sup> CKD has one of the highest mortality rates of any chronic medical condition in the United States. Cardiovascular disease (CVD) is the predominant cause of death for patients with CKD, with rates as high as 100 times the general population for patients with end-stage renal disease (ESRD).<sup>2</sup> Moreover, CKD and CVD share many common risk factors, including hypertension, diabetes, and smoking. The incidence of ESRD is unequally distributed across persons of varying racial and ethnic backgrounds (see Fig. 1, p. 30) and represents one of the most dramatic examples of disparities in health outcomes in the U.S.<sup>2,4,5</sup> Understanding the reasons for these disparities can improve strategies for prevention and early treatment in high-risk populations.

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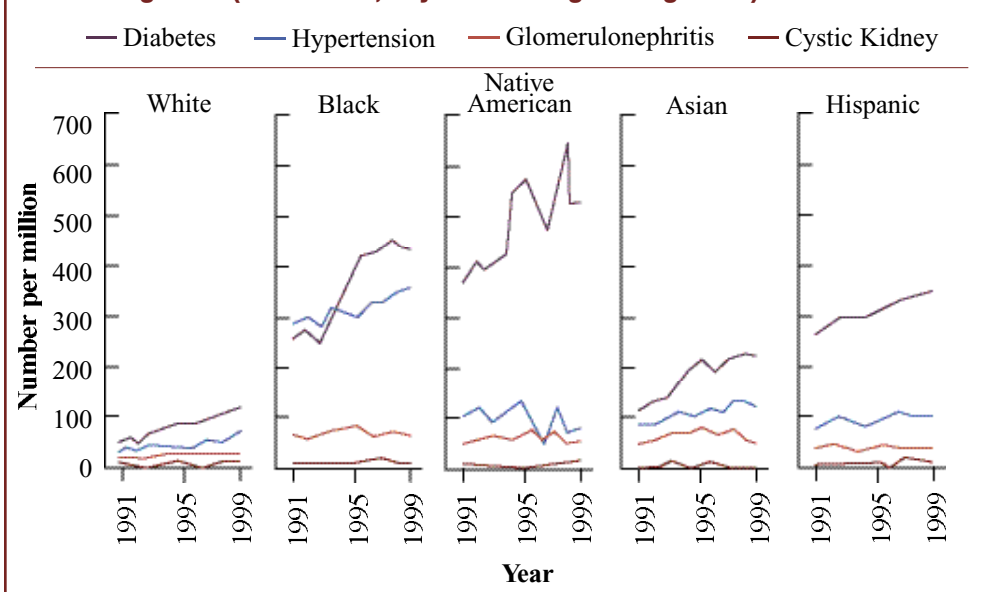
**Why is understanding racial and ethnic disparities in CKD important?**

Disparities in CKD can be defined as differences in the incidence, prevalence, and/or complications of CKD by gender, age, race, ethnicity, geography, and other potentially unmeasured variables. Racial and ethnic disparities in health care occur in the broad historic and contemporary social and economic inequality. Variations also appear in the ecology of the health care system such as clinical care, patient preferences, the environment, and persistent racial and ethnic discrimination.<sup>6,7,8,9</sup> Racial identity, although not a strong predictor of CKD, has some impact on health-promoting lifestyles, regardless of sociodemographics.<sup>10</sup> These differences provide an opportunity to better understand the mechanisms through which these factors might impact the initiation and natural progression of CKD and the response to treatment. Understanding race/ethnicity will help unravel the contribution of biological, cultural, and/or environmental factors that influence disease initiation and progression, therapeutic pharmacodynamics, and treatment response. The goal is to improve existing screening and treatment strategies. It is important to note that not all CKD and ESRD disparities reflect a disadvantage for minorities. Improved survival for racial and ethnic minorities, compared to whites, receiving dialysis treatments suggests there is much to learn beyond the traditional risk factors contributing to CVD and premature mortality in CKD and ESRD.

**What is the source of growth of the ESRD burden?**

The U.S. and many other countries in the world suffer from an explosive growth in the prevalence of ESRD patients. It has a tremendous economic impact on the health care system and levies an incredible personal burden at the community and family level. Despite the high rates of ESRD among racial and ethnic minorities, surprisingly, the relative prevalence of earlier stages of CKD (stages 1–3) is similar or even slightly diminished,

**Fig. 1. Trends in incidence rates by race and ethnicity, and primary diagnosis (1991-1999, adjusted for age and gender)<sup>3</sup>**



compared to whites (see Fig. 2).<sup>11</sup> Divergent patterns by race and ethnicity from near equivalence at stages 1–3 CKD to the 2- to 4-fold higher prevalence of ESRD have been postulated to include differences in the prevalence and level of control of CKD risk factors, pre-ESRD mortality rates, health beliefs, biological factors that predispose to CKD progression, disproportionately low rates of educational attainment, access to care, and the receipt of quality medical care.<sup>6,12</sup> In addition to the traditionally well-recognized CKD risk factors, such as diabetes and hypertension, the inclusion of racial ethnic minorities in our society as populations at high risk for CKD progression becomes critical, as we develop public health messages and strategies to curb this epidemic.

The disproportionately high rates of hypertension and diabetes among racial and ethnic minorities, with the increasing growth of these minority populations, suggest the rates of ESRD are likely to continue to rise.<sup>13</sup> Across all racial and ethnic groups, this relentless rise in ESRD is driven predominately by diabetes-related kidney disease (see Fig. 3, p. 32)<sup>14</sup> and likely to increase further given the increasing prevalence of obesity and diabetes among Americans.<sup>15</sup>

**What are the promoters and barriers that influence racial and ethnic disparities in CKD?**

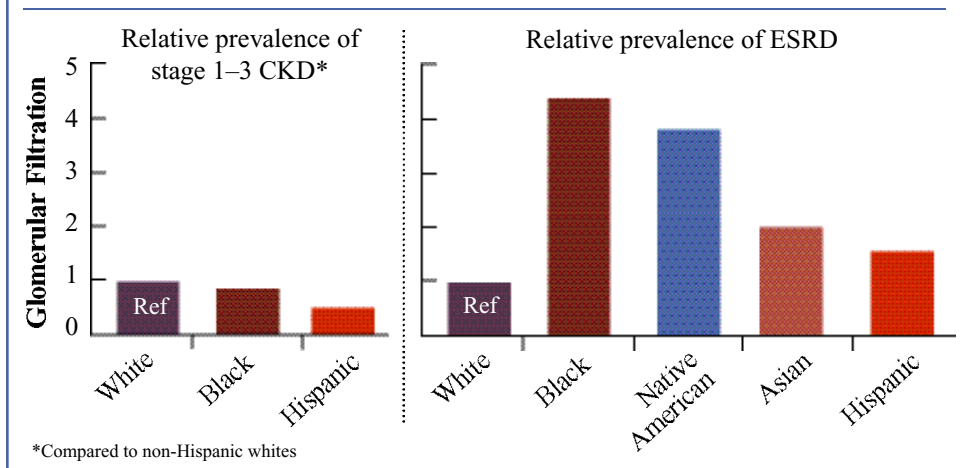
Although there might be potential biological variations among racial and ethnic groups, the emerging data from the human genome project suggest these interracial vari-

ations are modest at best and much smaller than intraracial variations.<sup>16,17</sup> It is important to understand potential modifiable barriers to CKD care and embrace them with a commitment toward immediate action. Many of the differences in the racial and ethnic disparities in CKD outcomes are linked to sociocultural differences between minority and majority populations in the U.S.<sup>12,18,19</sup> Although genetic links to CKD have been hypothesized,<sup>20</sup> emerging reports that environmental influences might modify gene and/or receptor expression (gene-environmental), suggest that many biologic components may be influenced by culture and lifestyle.<sup>21,22</sup> Recognition of the genesis and perpetuation of many underlying tenants of

the sociocultural differences highlighted in figure 5 (p. 34)<sup>23</sup> are paramount to address the CKD epidemic. Unfortunately, there has been reluctance to address many sensitive issues that underlie the propagation of these disparities, including recognition of social injustices imbedded within the health care and social support systems, and the prevalent lack of accepting self-responsibility in many minority and non-minority indigent populations. Each of these issues must be confronted.

In addition, low levels of educational attainment and income have been associated with an increased prevalence of CKD and important CKD risk factors, such as hypertension and diabetes. In fact, low levels of education and income are associated with increased health disparities in most disease conditions.<sup>24</sup> Despite the

**Fig. 2. Relative prevalence of chronic kidney disease (CKD, by estimated glomerular filtration rate) and end-stage renal disease (ESRD) by race/ethnicity, adjusted for age and gender<sup>2,11</sup>**



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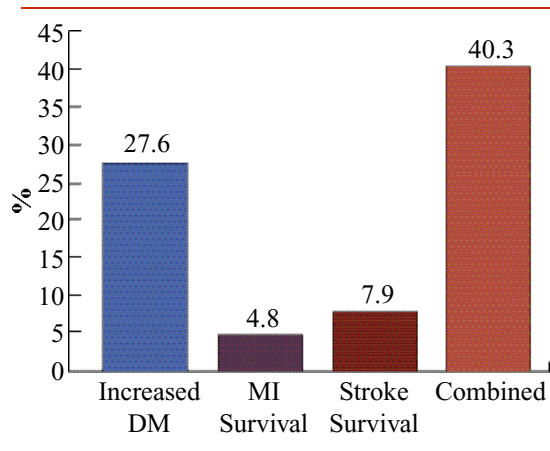
high level of national wealth, the inability to provide health care insurance to many of the nation's indigent people is disproportionately high among racial and ethnic minorities (see Fig. 4),<sup>25</sup> and further contributes to inadequate CKD and pre-ESRD care. Several recent studies,<sup>26,27,28,29,30</sup> but not all,<sup>31,32</sup> have highlighted racial and ethnic disparities, in the health care system, commonly associated with reduced-quality services. Karter et al. found mixed rates of diabetes-related complications in an ethnically diverse population with uniform health care coverage, except for increased rates of ESRD which existed across all racial/ethnic groups compared to whites.<sup>32</sup> In a retrospective analysis of almost 5,000 patients, whites, compared to African Americans, were three times as likely to undergo cardiovascular procedures prior to developing ESRD. However, the same cohort had nearly identical rates of cardiovascular procedures after developing ESRD, at which time Medicare covered all patients.<sup>33</sup>

Several of these findings underscore the institutionalization of biases within the health care system, while others point to underinsurance and/or lack of systematic care as a major driving force for racial, ethnic, and gender disparities in health.

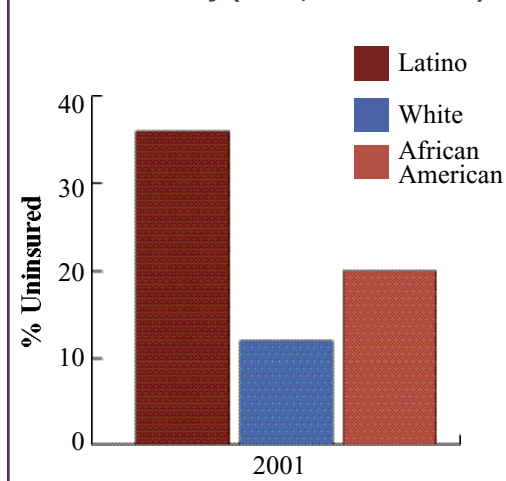
### Culture and health care beliefs

Further complicating health care delivery to racial and ethnic minorities are the multiple variations in beliefs and practices that extend across the nation's diverse cultural backgrounds.<sup>34</sup> Recognizing and respecting diverse cultural practices frequently engenders more confidence in the health care provider by the patient and improves the likelihood of patient adherence to therapeutic recommendations. Linguistic barriers—such as the high prevalence of English as a second language and low level of educational attainment—also compromise effective communication. Thus, the health care milieu is under increasing pressure to provide quality care to more people with fewer resources. It is further beset with an increasing pool of minority patients with limited English proficiency, diverse beliefs and health practices, and institutionalized systems rather insensitive to minorities and women. Such an environment invokes a moral mandate to provide the necessary mechanisms to develop culturally appropriate evidenced-based

**Fig. 3. Estimated contribution of increased diabetes mellitus (DM), and improved myocardial infarction (MI)/stroke survival to the increase in end-stage renal disease (1978-1991)<sup>14</sup>**



**Fig. 4. Uninsured by race and ethnicity (2001, adults 18-64)<sup>25</sup>**



care in settings prepared to address linguistic, educational, and cultural barriers. Moreover, the provider must move beyond assumptions about patients on a broad stereotype of ethnic background and implement principles of patient-centered care, including exploration, empathy, and responsiveness to patients' needs, values, and preferences.<sup>35</sup>

### Conclusion: The way forward

Given a snapshot of the many factors that might contribute to racial and ethnic disparities in CKD, how do we proceed with this understanding and what are recommendations for moving forward? One of the key elements is the recognition that sociocultural factors underlie many of these disparities. Therefore, trying to understand and systematically address social and cultural barriers in the health care system is a paramount initial strategy to reduce and/or eliminate disparities in health care. At a public health level, the continuing effort to ensure all Americans have access to and receive quality health care is critical to positively impact the CKD epidemic. It would help address racial and ethnic disparities and the lack of access to quality care for many non-minorities who lack or have limited health insurance.

Ensuring educational materials are culturally and linguistically appropriate may help modify health beliefs and improve health behaviors.<sup>36</sup> The educational messages need to be directed toward a sixth grade level to maximize comprehension in a diverse society with an increasing new immigrant pool, which at present, is rarely accomplished with most of the CKD or other health care literature.<sup>37</sup> In addition, many of the mes-

sages need to provide effective education for other high-risk populations, such as racial and ethnic minorities, poor rural and urban communities. The message for CKD prevention and early detection is the message of education and screening for CKD and CKD risk factors (see Table 1, p. 36). Targeting populations with high rates of diabetes and hypertension through programs such as the Kidney Early Evaluation and Prevention (KEEP)<sup>38</sup> and National Kidney Disease Education Program (NKDEP)<sup>39</sup> are critical for addressing the CKD epidemic. As we refine our understanding of CKD, we hope to move beyond racial and ethnic background as the defining risk for CKD and directly target the underlying biologic and sociocultural factors for which race and ethnicity could

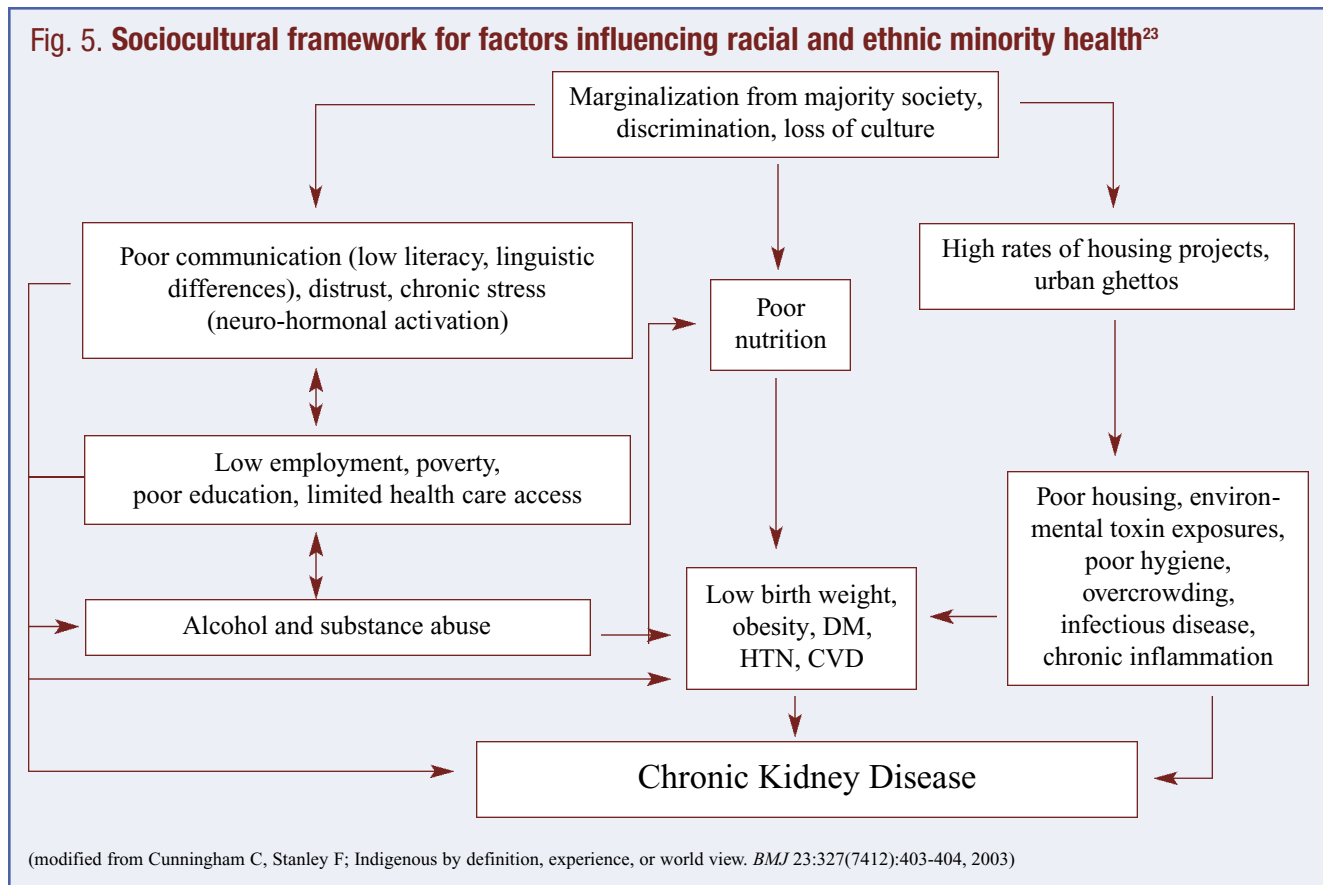
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be surrogates. Small-area analysis may help distinguish key environmental and subcultural influences embedded in geographic distributions of CKD, and further refine identification of communities at risk and educational messages that target specific populations. Finally, a comprehensive strategy to quell this CKD epidemic cannot overemphasize the need for an adjuvant payer system for those under- or uninsured, and the use of disease management systems to implement evidence-based care using a patient-centered approach, while linking economic incentives to improved clinical outcomes (Fig. 6). ■

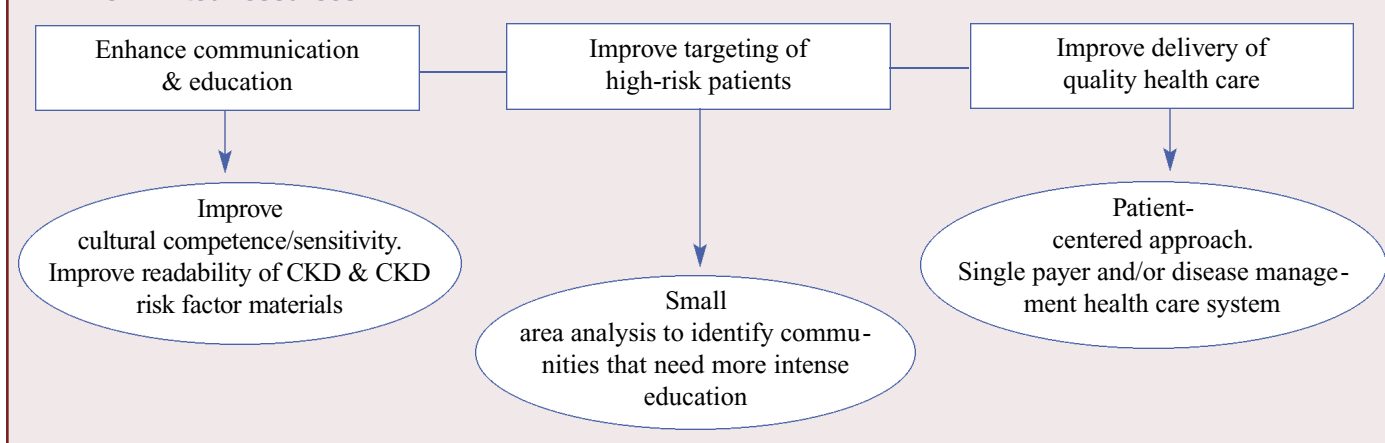
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**Fig. 5. Sociocultural framework for factors influencing racial and ethnic minority health<sup>23</sup>**



**Fig. 6. Strategies to translate racial/ethnic disparities in improved CKD/ESRD outcomes in an era of limited resources**



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**Table 1. Chronic kidney disease (CKD): A call to action**

Large-scale CKD detection and early treatment programs	CKD risk factor education and screening (hypertension & diabetes)
Automated reporting of estimated glomerular filtration rate by national laboratories	Proteinuria detection and management
Early detection and management of co-existing cardiovascular disease	Increased organ donation, especially from minority communities
Early nephrology referral for comanagement to help reduce CKD progression, and improve detection and treatment of CKD complications and coexisting diseases	Patient-centered approach, with sensitivity to the nation's diverse cultural constituency

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