



Addressing kidney health disparities with new national policy: the time is now

Claudia S. Walker¹, Crystal A. Gadegbeku²

¹Cleveland Clinic Lerner College of Medicine, Cleveland, OH, USA; ²Department of Kidney Medicine, Cleveland Clinic Health System, Cleveland, OH, USA

Contributions: (I) Conception and design: Both authors; (II) Administrative support: CA Gadegbeku; (III) Provision of study materials or patients: None; (IV) Collection and assembly of data: Both authors; (V) Data analysis and interpretation: Both authors; (VI) Manuscript writing: Both authors; (VII) Final approval of manuscript: Both authors.

Correspondence to: Claudia S. Walker. Department of Kidney Medicine, Glickman Urological and Kidney Institute, 9500 Euclid Avenue/Q7, Cleveland, OH 44195, USA. Email: walkerc@ccf.org.

Abstract: End-stage kidney disease (ESKD) affects over 780,000 Americans and is associated with excess morbidity and premature death. Kidney disease health disparities are well-recognized, manifesting as ESKD overburden among racial and ethnic minority populations. Specifically, Black and Hispanic individuals have a 3.4-fold and 1.3-fold greater life risk of developing ESKD than their white counterparts. There is compelling evidence that communities of color have less opportunity to benefit from kidney-specific care throughout the course of their disease, from pre-ESKD, to ESKD home therapies and kidney transplantation. These healthcare inequities have the combined devastating impact of worse outcomes and quality of life for patients and families at a significant financial cost on the healthcare system. In the last three years, across two presidential administrations, bold, broad initiatives have been outlined that, together could lead to significant transformation in kidney health. The Advancing American Kidney Health (AAKH) initiative was established as a national framework to revolutionize kidney care but did not address health equity. More recently, the Advancing Racial Equity executive order was announced, outlining initiatives to promote equity for historically underserved communities. Building from these presidential directives, we outline strategies to address the complex issue of kidney health disparities, focusing on patient awareness, care delivery, scientific advancement, and workforce initiatives. An equity-focused framework will guide policy advancements to reduce the kidney disease burden in susceptible populations and positively impact the health and well-being of all Americans.

Keywords: Health policy; end-stage kidney disease (ESKD); chronic kidney disease (CKD); health disparities

Submitted Nov 11, 2022. Accepted for publication Feb 06, 2023. Published online Feb 13, 2023.

doi: 10.21037/cdt-22-566

View this article at: <https://dx.doi.org/10.21037/cdt-22-566>

Opportunities for new health policies to impact kidney health disparities

End-stage kidney disease (ESKD) is a debilitating condition that leads to significant patient suffering and premature mortality. In addition, ESKD care places a significant burden on the U.S. healthcare system, accounting for \$50.8 billion annually in Medicare expenditures (1). With an aging society and the increased prevalence of kidney disease risk

factors, such as diabetes, the ESKD incidence is expected to continue to increase leading to more lives in jeopardy at unsustainable costs under the current care delivery system (2).

Compared to White Americans, Black and Hispanic individuals have 3.4-fold and 1.3-fold ESKD prevalence, respectively, and are more likely to develop kidney failure in their lifetime (3,4). Further, communities of color have less access to pre-ESKD care to slow kidney disease progression, the option of home renal replacement therapies (5), and

kidney transplantation leading to over-representation in dialysis units (6,7). Adding to morbidity in hemodialysis therapies, racial disparities exist in the optimization of dialysis vascular access (as outlined in this special issue) (8). Unfortunately, despite evidence that kidney transplantation is the optimal ESKD therapy, overall transplant outcomes are worse in Black compared to White Americans (9,10).

In 2019, the Trump administration executive order, Advancing American Kidney Health (AAKH), set the stage for bold national kidney health policy reform with three major goals (11): (I) reduce the incidence of kidney failure, (II) enhance patient choice through affordable ESKD treatments, and (III) increase access to kidney transplantation. However, the AAKH failed to address the well-recognized racial and ethnic kidney health disparities that significantly contribute to the U.S. disease burden. With the change of administration, Biden promptly announced “The Executive Order on Advancing Racial Equity and Support for Underserved Communities through the Federal Government” (12). This executive order was followed by the Health and Human Services (HHS) Equity Action Plan which is designed to promote equity by enhancing civil rights protection, business acquisitions, grant opportunities, capacity building, and prioritizing plans to reduce maternal mortality (13). Thus, in the current equity-focused policy environment, there are opportunities to incorporate policies within the AAKH framework that will positively impact kidney health equity.

Advancing awareness for screening and early identifications of kidney disease

Presently, an estimated nine in ten adults are unaware of their chronic kidney disease (CKD) status due to the asymptomatic course of the disease until late stages (14). Subsequently, 40–60% of patients initiate dialysis in an emergent, unplanned manner (15). The delay in diagnosis and patient awareness leads to risks of more rapid progression of kidney disease, subsequent comorbidities, and increased cardiovascular complications (16). Patient knowledge and health literacy along with opportunities for shared medical management are essential for positive outcomes. Further, the delay in care reduces the opportunity for shared, timely, informed decision-making on the renal replacement therapy (RRT) modality.

As outlined in AAKH, developing platforms for consumer and kidney community campaigns with a goal to enhance CKD screening are foundational. To effectively

reach underserved populations, education and screening for kidney disease and pertinent risk factors must be free, pervasive, and independent from access-to-care and insurance barriers. Implementing a robust culturally-concordant community health worker program is one strategy to improve patient education (17). As non-medical, trusted individuals who share the lived experiences of target populations, community health workers have the potential to bridge the divide between the kidney health professionals and high-risk communities. Cervantes *et al.* outlines kidney-specific strategies to utilize community health workers including (I) CKD screening promotion, (II) social support and buddy-programs to target clinical management, (III) support to assist with RRT modality selection, and (IV) assistance to facilitate transition to ESKD (17).

The widespread use of technology and social media provide unique opportunities to promote multi-generational patient education and awareness of kidney disease. Engaging social media, ads, and marketing are creative and effective strategies used to enhance awareness within other disease entities, including breast cancer screening and prevention (18). Garnering celebrity and popular sports team endorsements, also used in other areas, may lead to broad dissemination of critical information. Overall, further research is warranted to elucidate best strategies to inform and motivate diverse communities toward health promotion. For example, exploring a shared decision framework could be useful in discussing the nuances of race-free glomerular filtration rate reporting, thereby providing a unique opportunity to boost public awareness and empowerment in communities of color.

Delaying kidney disease progression

AAKH supports embracing new therapies, developing novel biomarkers, and incorporating artificial intelligence to advance the management of kidney disease. A greater understanding of the impact of social determinants of health in kidney disease progression is needed to guide social policy. The development of the Minority Health Social Vulnerability Index by the Centers for Disease Control and Prevention, and the Office of Minority Health in 2021 may be useful in identifying communities at risk and targeting resources through local and national policy. Beyond policy intervention, scientific exploration of the interactions between social determinants of health and biological susceptibility of developing ESKD (for example, the *APOLI* renal risk gene variant in people of African ancestry) is

critical. These scientific observations will potentially guide pharmacogenetic/pharmacogenomic approaches to disease management toward halting progression and even cures.

Importantly, promising therapies must be affordable and accessible. Therefore, controlling medication costs are critical to providing equal access to underinsured, economically stressed populations. Current pharmacological advancements demonstrating kidney and cardiovascular benefit, like sodium-glucose cotransport-2 (SGLT2) inhibitors, have excited the kidney community (19,20), only to lead to physician and patient frustration about the cost-prohibitive barriers inherent with this new class of medication. With an estimated retail price of over \$500 per month, evidence supports disparities in access to this medication class, linked to socioeconomic status, among Black and White individuals (21,22). As precision kidney medicine edges closer to reality, policies positioned to enable widespread use and benefit of innovative, life-changing therapies are a moral imperative.

Initiating value-based care models for optimal outcomes

Home dialysis therapies and kidney transplantation are cost-effective therapies associated with enhanced patient quality of life compared to in-center dialysis (23,24). AAKH supports the Center for Medicare and Medicaid Innovation (CMMI) value-based care models for kidney care. In addition, private insurers are developing similar value-based strategies for the management of chronic kidney disease with incentives and penalties. Notably, these care models, without risk adjustment parameters, are not designed to account for socioeconomic barriers (e.g., housing insecurity, transportation barriers) (25). As such, adjustments for specific populations or regions, particularly communities of color where projected outcomes are worse given social barriers, may indirectly impact outcomes and potentially exacerbate kidney health inequities through cherry-picking and lemon-dropping. Enhanced coordinated care for disadvantaged patients, home dialysis risk adjustments, and more robust documentation of social determinants of health (SDOH) are targeted strategies to address the latter limitations (25). On January 1, 2023, the inclusion of health equity incentives within Medicare payment for value-based kidney care that adjusts for low income populations is a critical step in the right direction (26). The potential to link data from the Minority Health Social Vulnerability Index to reimbursement strategies could further protect populations

from unintended consequences in these new care models.

Overall, equal access is critical for these models to be universally effective and to promote optimal outcomes in CKD management, including managing comorbidities and transition to ESKD. Potentially, such actions will have the greatest impact on the highest risk patients with positive patient outcomes and substantial healthcare savings.

Incorporating telemedicine within CKD healthcare management frameworks

The implementation of telemedicine to improve care in populations that have historically faced challenges attending in-person appointments should be leveraged to enhance CKD management within the value-based care models. “Telenephrology” and home-based treatment provide greater opportunities for more flexible, integrated care that fosters patient autonomy and greater treatment access, while reducing transportation obstacles that low-income communities often face. Tan *et al.* noted comparable outcomes in CKD patients who received telehealth management versus those who received in-person visits, with enhanced clinical visit adherence in the telemedicine health group (27).

However, Eberly *et al.* discussed lessons from the COVID-19 pandemic that highlighted barriers to broadband internet, video-capable technologies, and successful implementation of telehealth in low-income and minoritized communities (28). Lew *et al.* outlined strategies to prevent the exacerbation of the digital divide and to promote a more harmonious integration of technology within ESKD management, including supplying self-supported, user-friendly devices in vulnerable populations, digital technology literacy courses, and the inclusion of telehealth coverage within value-based care models (29). Providing equitable access to state-of-the-art technology resources (e.g., broadband) in all communities to align with home-based innovations would have broad benefit in health care delivery from patient visits to telemonitoring and novel therapeutics.

Increasing access to kidney transplantation

Kidney transplantation is considered the optimal therapy for ESKD (24). However, currently, over 95,000 patients sit on the waitlist for a kidney (30). Historically, Black and Hispanic Americans have reduced access to transplantation due to less wait-list referrals and sparse live donation

opportunities, as well as worse transplant graft survival and lower quality kidney transplants (31-35). One of the mechanisms that AAKH outlines to address kidney transplant shortages is to augment rates of living donation (11). For many Americans, the ‘cost’ of donation is challenging, but for those with economic instability, it is a significant barrier. The mean cost of donation is estimated at \$36,000; however, considering potential wage losses during recovery and risks to job security, the cost may be much greater (36). Disparities in potential living donor pools among Black individuals are multifactorial with logistical issues, donor health, mistrust, and inadequate social and financial support providing some explanation. In addition, allowable cost for reimbursement may not overcome the higher poverty rates among people of color compared to White Americans due to a long history of structural racism (37). Thus, living donation should be cost-neutral for all donors and should be one of the key strategies for enhancing donation in new policies.

Promoting research

AAKH recognized that the federal investment in kidney disease research compared to the annual expenditure in kidney disease care is less than 2% (38). Even so, the current research portfolio, including the National Institute of Diabetes and Digestive and Kidney Diseases-supported national studies and KidneyX (kidneyx.org)—a public-private partnership to accelerate innovations like the artificial kidney—provide much hope for care advancement. Focused investments accelerate progress as seen in the significant benefits of continuous glucose monitoring, targeted cancer therapies, and the rapid development of COVID vaccines. Additional support for research on social determinants of health in kidney disease could guide further policy advancement, as well as yield important insights for effective patient dissemination and activation, artificial intelligence investigation, generalizability, and precision therapy. As national programs to boost innovation develop, like KidneyX, there should be coordinated policies to ensure advancements are equitably accessible.

Promoting workforce diversity

There have been no policies to address the lack of diversity in the healthcare workforce. A workforce that reflects the populations served has the potential to improve access, care delivery and quality, boost innovation, and advocate

for policy advancement (39,40). Black and Hispanic individuals remain woefully under-represented among health professionals and the pipeline. While female physicians have made significant strides in representation in medicine, Black and Hispanic American medical student percentages remain stagnant over four decades at 5–6% of the student population (41). Further, Black physicians at the rank of Professor comprise less than 4%, thereby limiting the opportunities for academic leadership (42). A diverse pipeline is a fundamental step to building an inclusive physician workforce focused on kidney health that could have a positive impact on patients served (43). This is achieved by dismantling the social, economic, and geographic barriers that preclude the opportunities and advancement of minority and disadvantaged students within the field of medicine. Therefore, the support of national programs linked to AAKH and the HHS Equity Plan to enhance inclusiveness of health professional training and exposure to the fields of nephrology, vascular medicine, interventional radiology, transplant surgery, nephrology nursing, advanced practitioners, technicians, and related fields could have widespread benefit for patient care and address current health professional shortages.

In summary, the succession of executive orders across two administrations provide goals and strategies for transformative policy development to significantly impact kidney health equity in America. Kidney health disparities are prevalent, multifactorial, complex, and individually and economically burdensome. Therefore, on-going national cross-cutting responsive policies are required to make meaningful change resulting in happier, healthier lives for Americans with and at risk for kidney disease.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the Guest Editors (Lee Kirksey, Sasan Partovi) for the series “Endovascular and Surgical Interventions in the End Stage Renal Disease Population” published in *Cardiovascular Diagnosis and Therapy*. The article has undergone external peer review.

Peer Review File: Available at <https://cdt.amegroups.com/article/view/10.21037/cdt-22-566/prf>

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <https://cdt.amegroups.com/article/view/10.21037/cdt-22-566/coif>). The series “Endovascular and Surgical Interventions in the End Stage Renal Disease Population” was commissioned by the editorial office without any funding or sponsorship. CAG is a council member of the American Society of Nephrology, speaker to COVID-19 for NIDDK and receives funding support from the National Institutes of Health and NIDDK. The authors have no other conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

References

1. United States Renal Data System. Healthcare expenditures for persons with ESRD. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, 2022.
2. McCullough KP, Morgenstern H, Saran R, et al. Projecting ESRD Incidence and Prevalence in the United States through 2030. *J Am Soc Nephrol* 2019;30:127-35.
3. Bock F, Stewart TG, Robinson-Cohen C, et al. Racial disparities in end-stage renal disease in a high-risk population: the Southern Community Cohort Study. *BMC Nephrol* 2019;20:308.
4. McClellan W, Warnock DG, McClure L, et al. Racial differences in the prevalence of chronic kidney disease among participants in the Reasons for Geographic and Racial Differences in Stroke (REGARDS) Cohort Study. *J Am Soc Nephrol* 2006;17:1710-5.
5. Rizzolo K, Cervantes L, Shen JI. Racial and Ethnic Disparities in Home Dialysis Use in the United States: Barriers and Solutions. *J Am Soc Nephrol* 2022;33:1258-61.
6. Purnell TS, Bae S, Luo X, et al. National Trends in the Association of Race and Ethnicity With Predialysis Nephrology Care in the United States From 2005 to 2015. *JAMA Netw Open* 2020;3:e2015003.
7. Arya S, Melanson TA, George EL, v. Racial and Sex Disparities in Catheter Use and Dialysis Access in the United States Medicare Population. *J Am Soc Nephrol* 2020;31:625-36.
8. Zhang Y, Thamer M, Lee T, et al. Racial Disparities in Arteriovenous Fistula Use Among Hemodialysis Patients: The Role of Surgeon Supply. *Kidney Int Rep* 2022;7:1575-84.
9. Mohandas R, Casey MJ, Cook RL, et al. Racial and socioeconomic disparities in the allocation of expanded criteria donor kidneys. *Clin J Am Soc Nephrol* 2013;8:2158-64.
10. Wesselman H, Ford CG, Leyva Y, et al. Social Determinants of Health and Race Disparities in Kidney Transplant. *Clin J Am Soc Nephrol* 2021;16:262-74.
11. Saffer T. Advancing American kidney health initiative summary. USA: National Kidney Foundation, 2019.
12. The White House. Executive order 13985: On advancing racial equity and support for underserved communities through the federal government. 2021. Available online: <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/>
13. U.S. Department of Health and Human Services. Health and Human Services Equity Action Plan. U.S. Department of Health and Human Services, 2022.
14. Centers for Disease Control and Prevention. Chronic kidney disease in the United States, 2021. Atlanta, GA: Department of Health and Human Services, 2021.
15. Hassan R, Akbari A, Brown PA, et al. Risk Factors for Unplanned Dialysis Initiation: A Systematic Review of the Literature. *Can J Kidney Health Dis* 2019;6:2054358119831684.
16. Plantinga LC, Boulware LE, Coresh J, et al. Patient awareness of chronic kidney disease: trends and predictors. *Arch Intern Med* 2008;168:2268-75.
17. Cervantes L, Robinson BM, Steiner JF, et al. Culturally Concordant Community-Health Workers: Building Sustainable Community-Based Interventions that

- Eliminate Kidney Health Disparities. *J Am Soc Nephrol* 2022;33:1252-4.
18. Han CJ, Lee YJ, Demiris G. Interventions Using Social Media for Cancer Prevention and Management: A Systematic Review. *Cancer Nurs* 2018;41:E19-31.
 19. Leoncini G, Russo E, Bussalino E, et al. SGLT2is and Renal Protection: From Biological Mechanisms to Real-World Clinical Benefits. *Int J Mol Sci* 2021.
 20. Spertus JA, Birmingham MC, Nassif M, et al. The SGLT2 inhibitor canagliflozin in heart failure: the CHIEF-HF remote, patient-centered randomized trial. *Nat Med* 2022;28:809-13.
 21. Aggarwal R, Vaduganathan M, Chiu N, et al. Out-of-Pocket Costs for SGLT-2 (Sodium-Glucose Transport Protein-2) Inhibitors in the United States. *Circ Heart Fail* 2022;15:e009099.
 22. Eberly LA, Yang L, Eneanya ND, et al. Association of Race/Ethnicity, Gender, and Socioeconomic Status With Sodium-Glucose Cotransporter 2 Inhibitor Use Among Patients With Diabetes in the US. *JAMA Netw Open* 2021;4:e216139.
 23. Krahn MD, Bremner KE, de Oliveira C, et al. Home Dialysis Is Associated with Lower Costs and Better Survival than Other Modalities: A Population-Based Study in Ontario, Canada. *Perit Dial Int* 2019;39:553-61.
 24. Abecassis M, Bartlett ST, Collins AJ, et al. Kidney transplantation as primary therapy for end-stage renal disease: a National Kidney Foundation/Kidney Disease Outcomes Quality Initiative (NKF/KDOQIM) conference. *Clin J Am Soc Nephrol* 2008;3:471-80.
 25. Reddy YNV, Tummalapalli SL, Mendu ML. Ensuring the Equitable Advancement of American Kidney Health—the Need to Account for Socioeconomic Disparities in the ESRD Treatment Choices Model. *J Am Soc Nephrol* 2021;32:265-7.
 26. Centers for Medicare & Medicaid Services. Federal Register: 42 CFR Parts 413 and 512. Department of Health and Human Services, 2022;87:67136-303.
 27. Tan J, Mehrotra A, Nadkarni GN, et al. Telenephrology: Providing Healthcare to Remotely Located Patients with Chronic Kidney Disease. *Am J Nephrol* 2018;47:200-7.
 28. Eberly LA, Kallan MJ, Julien HM, et al. Patient Characteristics Associated With Telemedicine Access for Primary and Specialty Ambulatory Care During the COVID-19 Pandemic. *JAMA Netw Open* 2020;3:e2031640.
 29. Lew SQ, Wallace EL, Srivastana V, et al. Telehealth for Home Dialysis in COVID-19 and Beyond: A Perspective From the American Society of Nephrology COVID-19 Home Dialysis Subcommittee. *Am J Kidney Dis* 2021;77:142-8.
 30. Organ Procurement and Transplantation Network. Waitlist Overall by Organ. Health Resources & Services Administration: U.S. Department of Health and Human Services, 2022.
 31. Purnell TS, Luo X, Cooper LA, et al. Association of Race and Ethnicity With Live Donor Kidney Transplantation in the United States From 1995 to 2014. *JAMA* 2018;319:49-61.
 32. Patzer RE, Perryman JP, Schragger JD, et al. The role of race and poverty on steps to kidney transplantation in the Southeastern United States. *Am J Transplant* 2012;12:358-68.
 33. Epstein AM, Ayanian JZ, Keogh JH, et al. Racial disparities in access to renal transplantation—clinically appropriate or due to underuse or overuse?. *N Engl J Med* 2000;343:1537.
 34. Kasiske BL, London WJ, Ellison MD. Race and socioeconomic factors influencing early placement on the kidney transplant waiting list. *J Am Soc Nephrol* 1998;9:2142-7.
 35. Purnell TS, Luo X, Kucirka LM, et al. Reduced Racial Disparity in Kidney Transplant Outcomes in the United States from 1990 to 2012. *J Am Soc Nephrol* 2016;27:2511-8.
 36. Cheng XS, Han J, Braggs-Gresham JL, et al. Trends in Cost Attributable to Kidney Transplantation Evaluation and Waiting List Management in the United States, 2012-2017. *JAMA Netw Open* 2022;5:e221847.
 37. Lu Y, Norman SP, Doshi MD. Understanding structural racism as a barrier to living donor kidney transplantation and transplant care. *Curr Transpl Rep* 2022;9:119-26.
 38. U.S. Government Accountability Office. National Institutes of Health: Kidney Disease Research Funding and Priority Setting. Available online: <https://www.gao.gov/products/gao-17-121>
 39. Gomez LE, Bernet P. Diversity improves performance and outcomes. *J Natl Med Assoc* 2019;111:383-92.
 40. Capers Q 4th, Johnson A, Berlacher K, et al. The Urgent and Ongoing Need for Diversity, Inclusion, and Equity in the Cardiology Workforce in the United States. *J Am Heart Assoc* 2021;10:e018893.
 41. AAMC Data Warehouse. Figure 13. Percentage of U.S. medical school graduates by race/ethnicity (alone), academic year 2018-2019. AAMC, 2019.

42. AAMC Data Warehouse. Figure 15. Percentage of full-time U.S. medical school faculty by race/ethnicity, 2018. AAMC, 2018.
43. Lederer E, Lebowitz J. Current State of the Workforce in Nephrology. *Adv Chronic Kidney Dis* 2020;27:281-90.e1.

Cite this article as: Walker CS, Gadegbeku CA. Addressing kidney health disparities with new national policy: the time is now. *Cardiovasc Diagn Ther* 2023;13(1):115-121. doi: 10.21037/cdt-22-566