



An Interview with Karly Murphy, MD, MHS, the first-place winner of the 2020 CJASN Trainee of the Year competition.

CJASN Editor-in-Chief Rajnish Mehrotra interviewed Karly Murphy on the findings from her CJASN article, "[Association of Socioeconomic Status and Comorbidities with Racial Disparities during Kidney Transplant Evaluation](#)," as well as her outlook on the field and advice for trainees. [Listen now!](#)

Karly Murphy, MD, MHS, is a general internist and an assistant professor within the Division of General Internal Medicine at Johns Hopkins University School of Medicine. She attended Harvard Medical School before coming to Hopkins where she completed internal medicine residency (Urban Health track) and a GIM fellowship. Murphy is passionate about improving the health of vulnerable populations with multimorbidity. Her research focuses on understanding how medically complex, vulnerable populations utilize and navigate the health care system and on developing pragmatic interventions to improve chronic disease care.

RM: Can you briefly introduce yourself to the CJASN audience?

KM: Yes, thank you. I am a general internist and an assistant professor in the Division of General Internal Medicine at Johns Hopkins School of Medicine. I did my internal medicine residency at Johns Hopkins within the Urban Health primary care track and currently practice as a primary care physician in the Baltimore area. In my research, I'm interested in how medically complex patients, particularly those who are the most vulnerable members of society, navigate our complex health care system and how we can improve how we deliver coordinated care to them. Our patients with kidney disease are some of our most complicated patients, who are cared for by multiple providers, and many are from social disadvantaged backgrounds.

RM: What sparked your interest in research in racial disparities in access to kidney transplant in the United States?

KM: In short, it brings together my clinical and research interests. As a clinician, I was struck in residency by how my Black patients in East Baltimore were far more likely to have a life expectancy nearly 10 years less than White patients who were born a neighborhood or two away. In fact, I saw one patient in primary care who had started the kidney transplant process. I asked where he was in the process, and he said that he was waiting for a phone call back, which was at least 6 months prior by the medical record. I have no idea if he missed an outreach phone call or letter, but the fact was that he wasn't sure what to do next and was slipping through the cracks in our health care system.

For me, access to kidney transplantation represented an opportunity to delve in to understanding why these racial disparities exist, extending from the patient-, provider-, and health system-levels. There are many discrete points in this process, and this offers

measurement opportunities to subdivide and focus on how social determinants influence racial disparities.

RM: What is the gap in our knowledge that you hoped to bridge with your work?

KM: We knew that Black patients were less likely to be listed or to receive a kidney transplant compared with White patients from prior studies in the general population. We also knew that low socioeconomic status and high comorbidity was associated with a lower likelihood of listing.

Interestingly, work led by Freeman and colleagues suggested that these disparities in listing for kidney transplantation were not observed in the Veteran Affairs population. To us, this suggested that (1) racial disparities can be addressed successfully, and (2) it is critical to understand the mechanisms of these racial disparities. We wanted to move our understanding from observational studies to causal mediation analysis to start to unpack how differences in socioeconomic status and comorbidity could potentially explain racial disparities in listing for transplant and receipt of transplant.

RM: So, what were your findings?

KM: We used a longitudinal cohort of about 3,000 patients between 2009 and 2018, of which 48% self-reported Black race. We measured socioeconomic status by income, education, and employment. We found that differences in socioeconomic status could explain 36% of the racial disparities and differences in comorbidity, and differences in comorbidity could explain 44% of the racial disparities in listing. When we looked at socioeconomic status and comorbidity together as mediators, we could account for 58% of the disparities in listing. This supports the idea that socioeconomic status and comorbidity play overlapping but distinct roles in mediating racial disparities for listing for kidney transplantation. Yet even after accounting for differences in socioeconomic status and comorbidity, Black patients were still 10% less likely to be listed compared to White patients. One possible explanation is racial bias, both implicit bias and explicit bias on the part of providers, transplant committee members, and structural racism. We also found that socioeconomic status and comorbidity did not act as mediators to explain the racial disparities to receive a kidney transplant among those who were listed.

RM: There is a lot of focus on the use of race correction when reporting eGFR these days. What are your views on the role, if any, eGFR reporting plays in racial disparities to kidney transplantation in the United States?

KM: That's a great question. As clinicians, we cannot escape that race shapes our patients' health both in and out of the clinic. I view race as a social construct that encompasses genetics, skin color, and, most importantly, their lived experience. I'm concerned that by including a race-based variable, we are embedding an algorithm that systematically overestimates eGFR for Black patients and puts them at risk for unnecessary delays in care. While we may not fully understand why inclusion of race may improve eGFR estimation when the algorithms, such as

CKD-EPI, were established, the patient-centered implications for overestimating eGFR are great. Black patients are already at risk for faster progression to kidney failure and face disparities in accessing kidney transplantation. Overestimating eGFR can lead to later diagnosis of CKD, later referral to transplant clinics, and later listing for transplant.

Other problems include that using this binary variable is that it lacks the nuance for today's multi-cultural society. Use of Cystatin-C sounds promising to include in algorithms, but it is also not widespread in community practice, particularly that in primary care, who refer patients to nephrology and transplant. Another concern is that race within the EMR may not be accurate. It's not always filled in by the patient, so patients are at risk for misclassification.

RM: Your work adds to the large body of knowledge on disparities in access to kidney transplant in the US. What are the next steps in your research? Or more broadly, for the field?

KM: To me, this study highlights the roles that social determinants of health and structural racism play in access to kidney transplant, even just the listing stage alone.

As a field, we need to invest in programs that will address structural racism and, by doing so, to address deep-seeded social determinants that contribute directly and indirectly to kidney disease. We need to advocate for changes to policies that perpetuate racial disparities in housing, food insecurity, and even the high cost of medications that place undue burden on our patients to self-manage their health conditions. We need to also address implicit biases that health care providers have when interacting with Black transplant candidates and likely negatively influence their ability to receive care. I think that we are more cognizant, overall, that this is a reality for our Black patients, but it is our responsibility to address our own biases, however painful, and make lasting changes.

In our paper, we do suggest that transplant centers focus on modifiable barriers for transplant candidates to help patients navigate this process. Transplant centers already utilize coordinators, care managers, and/or social workers for this role both pre- and post-transplant who are often tasked with addressing social determinants in patients and acting as a liaison with multiple subspecialists. I'm interested in understanding what makes successful coordination for our patients with kidney disease, even before they are referred for transplant evaluation. This work also has challenged me to think more broadly about what constitutes care coordination, how we measure it, and what successful implementation would look like from both a patient, provider, and health system perspective. I'm also in the early stages of a project looking at implicit bias within electronic medical records. Clinicians not only document the health history but also their assessment of the patient and may note missed appointments or medication adherence concerns, which has the potential to change how future providers view and care for patients.

RM: Thank you, this is important work. Congratulations again! What words of advice or wisdom do you have for people that are contemplating or just starting their research training with a focus on kidney disease?

KM: Thank you so much for this honor! I would advise trainees to seek out mentors who are committed to helping you follow your passion and are able to help you identify how to shape a research question around your area of interest, even if it's not their primary research focus. Don't be afraid to seek out collaborators to learn new skills or to discuss the context of your work. Kidney disease, particularly racial disparities, has a wealth of studies, and being able to learn from experts on how they approach and discuss these issues has been invaluable to me. Everyone has been so generous with their time and comments and it's very inspiring to see them advocate for our patients.