CMS Quality 2023 Conference

Building Resilient Communities:

Having an Equitable Foundation for Quality Healthcare

The Kidney Community in Action for Health Equity












Access to Care Among End Stage Renal Disease Patients

Social Determinants of Health and ESRD

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End Stage Renal Disease National Coordinating Center

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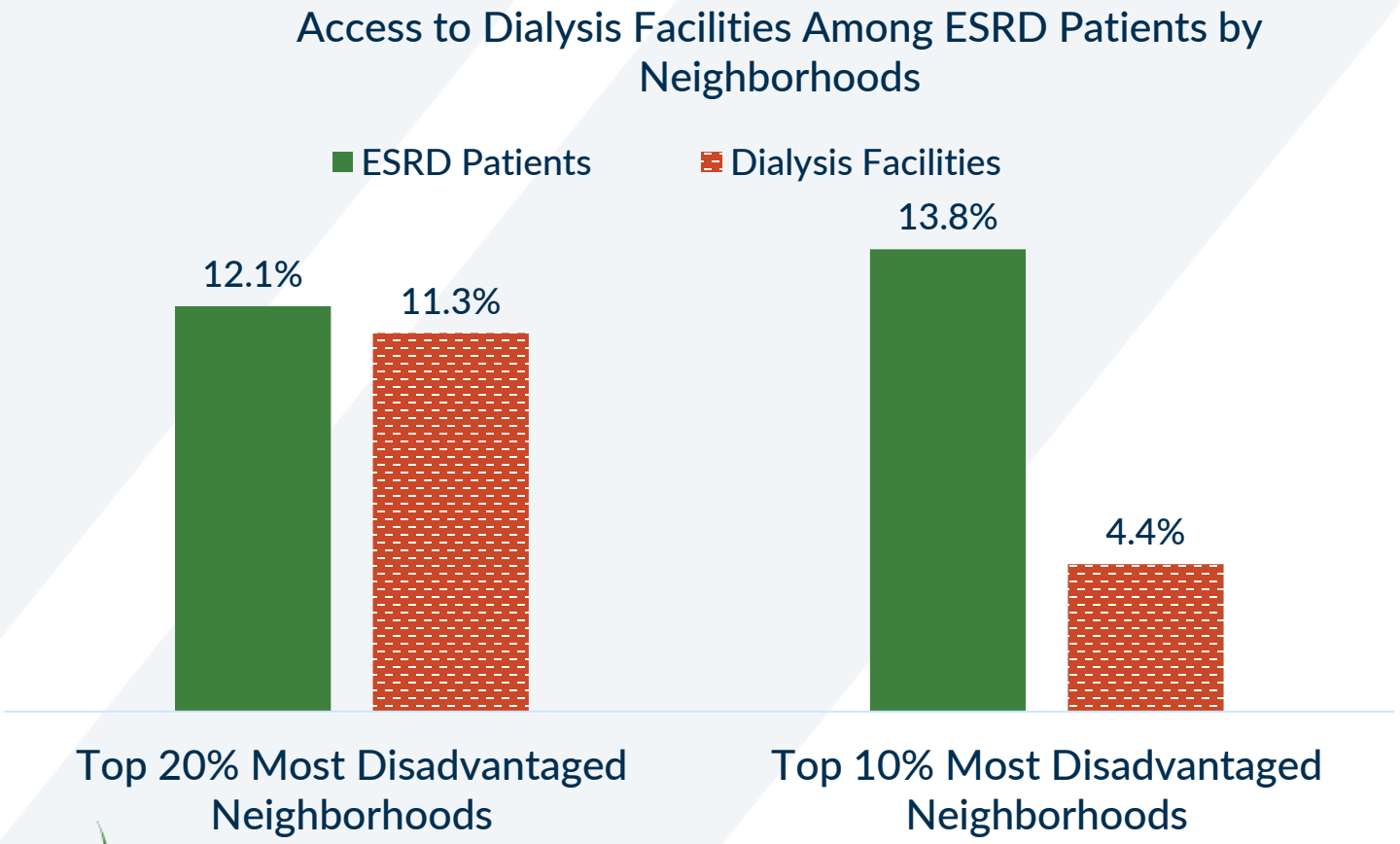
ESRD Patients in Low Socioeconomic Neighborhoods Are Underserved by Dialysis Facilities

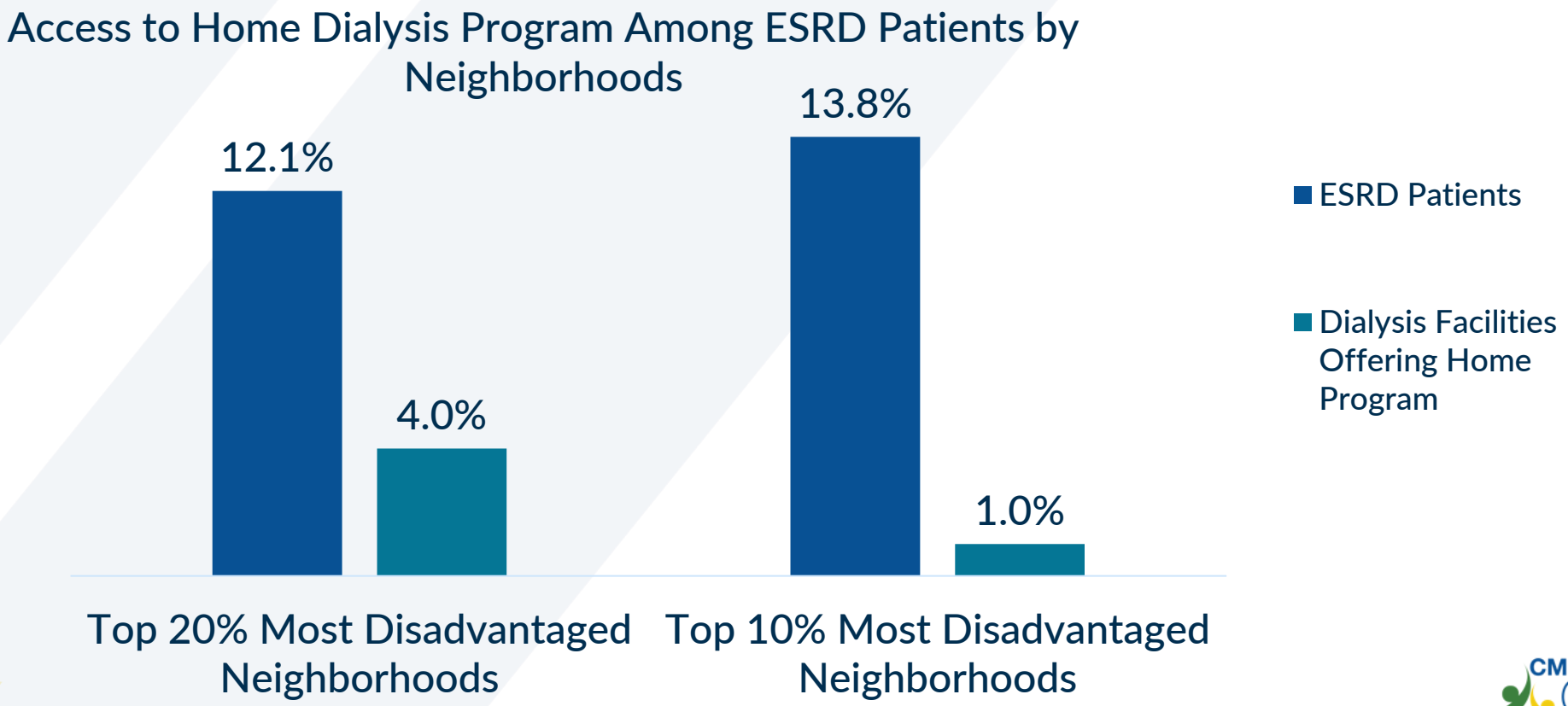


Data Sources and Geocoding:

- Area Deprivation Index (ADI)[1], a 17-indicator area-based measure of socioeconomic disadvantage that includes income, education, employment, and housing quality
- End-Stage Renal Disease Quality Reporting System (EQRS) patients who had not been discharged as of Dec 2022, patient addresses were extracted and linked with ADI
- Neighborhood is defined as a Census Block Group

[1] Kind, A. J., & Buckingham, W. R. (2018). Making neighborhood-disadvantage metrics accessible—the neighborhood atlas. *The New England journal of medicine*, *378*(26), 2456.

ESRD Patients in Low Socioeconomic Neighborhoods Have Limited Access to Dialysis Facilities Offering Home Program



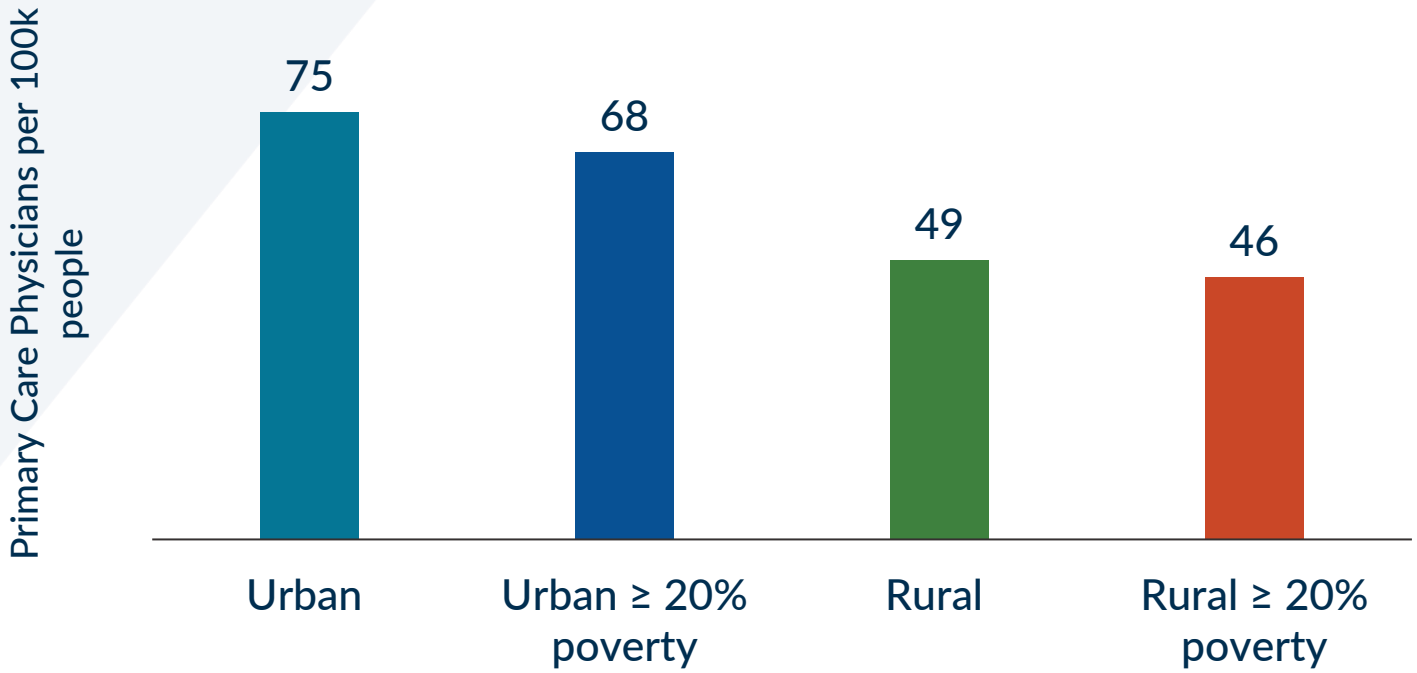
Data Source: EQRS

Access to Care Was Lowest Among ESRD Patients in Rural Counties with More Than 20% Poverty

Percentage ESRD Patients by Residence

	Percent of Total ESRD Patients	Percent Living in ≥ 20% Poverty
Urban	85.0%	14.3%
Rural	15.0%	37.3%

Access to Primary Care Providers Among ESRD Patients



Urban-Rural Classification based on US Census
Data Source: Federal Communications Commission linked with EQRS patient records vis FIPS codes.

Advancing Equity in ESRD Outcomes

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Professor of Medicine and Epidemiology
Division of Nephrology
Johns Hopkins University School of Medicine

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Objectives

- Provide a brief overview of racial, ethnic and income disparities in ESRD/kidney failure
- Highlight opportunities to advance equity in ESRD outcomes

Racial and Income Disparities in ESRD Have Been Known for Decades

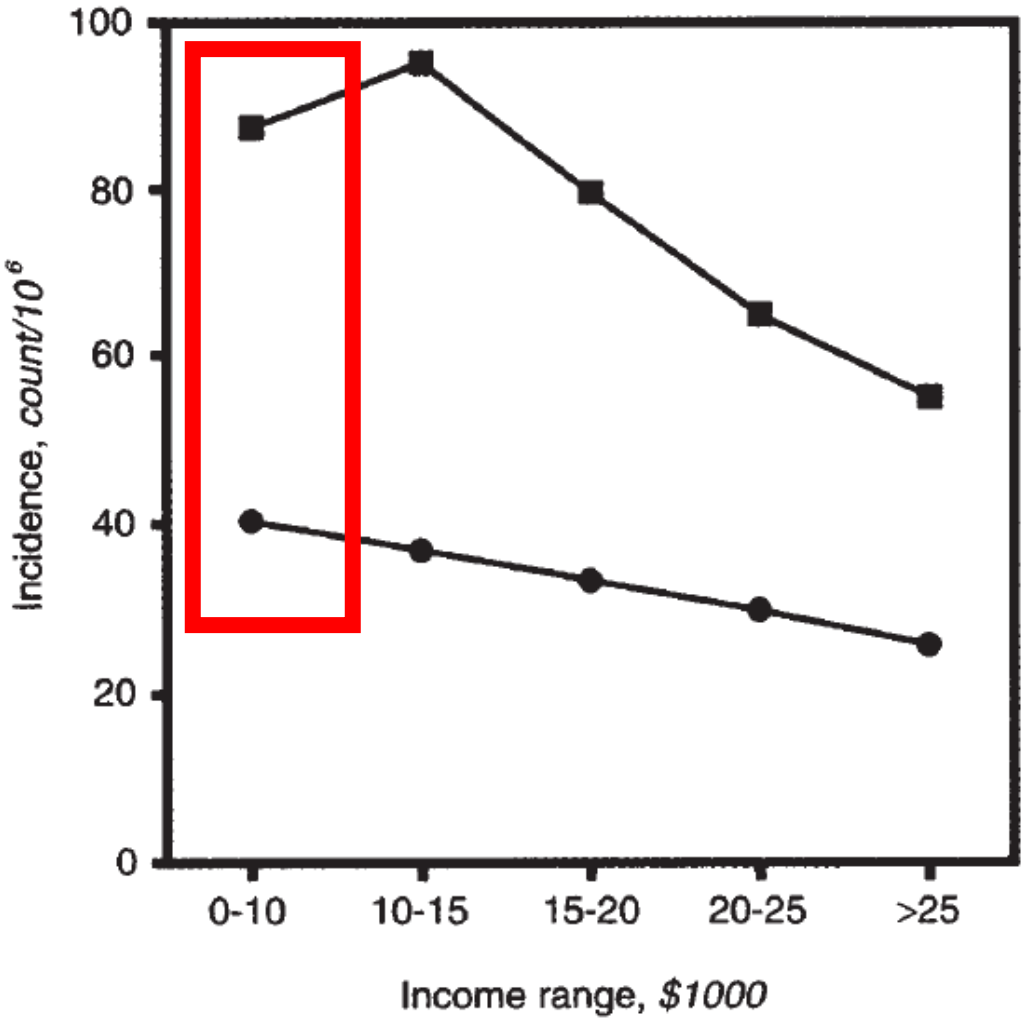


Fig. 1. *Estimated average incidence of t-ESRD rate for Whites (circles) and Blacks (squares) at different levels of income, adjusted for age and sex.*

Young, E., Mauger, E., Jiang, K., Port, F., & Wolfe, R. (1994). Socioeconomic status and end-stage renal disease in the United States. *Kidney International*. *45;* 907–911.

Racial and Ethnic Disparities in Pre-dialysis Nephrology Care Persist

- Black, Hispanic and Asian patients are less likely to receive nephrology care within 12 months of initiating dialysis

Table 3. Temporal Trends in Racial/Ethnic Disparities in Receipt of at Least 12 Months of Predialysis Nephrology Care

	Crude OR (95% CI)				Adjusted OR (95% CI)[a]			
Cohort year	White	Black	Hispanic	Asian	White	Black	Hispanic	Asian
2005-2007	1 [Reference]	0.74 (0.72-0.75)	0.61 (0.59-0.63)	0.81 (0.77-0.85)	1 [Reference]	0.82 (0.80-0.84)	0.67 (0.65-0.69)	0.84 (0.80-0.89)
2008-2010	1 [Reference]	0.71 (0.69-0.72)	0.58 (0.57-0.60)	0.81 (0.78-0.85)	1 [Reference]	0.77 (0.76-0.79)	0.63 (0.61-0.65)	0.84 (0.81-0.88)
2011-2013	1 [Reference]	0.72 (0.71-0.73)	0.57 (0.56-0.59)	0.83 (0.80-0.86)	1 [Reference]	0.78 (0.76-0.79)	0.61 (0.59-0.62)	0.85 (0.81-0.88)
2014-2015	1 [Reference]	0.71 (0.70-0.73)	0.60 (0.58-0.61)	0.90 (0.86-0.94)	1 [Reference]	0.76 (0.74-0.78)	0.61 (0.60-0.63)	0.90 (0.86-0.95)

Purnell T, Luo X, Bae S, Johnson M, Crews D, Cooper L, Henderson M, Greer R, Rosas S, Segev D. *JAMA Network Open*. 2020;3(8):e2015003.

Racial and Ethnic Disparities in Pre-dialysis Nephrology Care

Disparities persist (but are attenuated) after accounting for disparities in insurance coverage

Table 4. Exploratory Mediation Analysis of Racial/Ethnic Disparities in Receipt of at Least 12 Months of Predialysis Nephrology Care[a]

	OR (95% CI)			
Cohort	White	Black	Hispanic	Asian
Regression model 2[b]				
2005-2007	1 [Reference]	0.90 (0.89-0.91)	0.84 (0.83-0.85)	0.99 (0.97-1.00)
2008-2010	1 [Reference]	0.90 (0.90-0.91)	0.81 (0.80-0.82)	0.98 (0.97-1.00)
2011-2013	1 [Reference]	0.91 (0.90-0.91)	0.83 (0.82-0.84)	0.98 (0.97-1.00)
2014-2015	1 [Reference]	0.92 (0.91-0.92)	0.86 (0.85-0.87)	0.99 (0.98-1.00)
Regression model 3[c]				
2005-2007	1 [Reference]	0.92 (0.92-0.93)	0.87 (0.86-0.88)	0.98 (0.96-0.99)
2008-2010	1 [Reference]	0.92 (0.92-0.93)	0.85 (0.84-0.85)	0.98 (0.96-0.99)
2011-2013	1 [Reference]	0.93 (0.92-0.93)	0.86 (0.86-0.87)	0.98 (0.97-0.99)
2014-2015	1 [Reference]	0.94 (0.93-0.95)	0.89 (0.89-0.90)	0.98 (0.97-1.00)
Regression model 4[d]				
2005-2007	1 [Reference]	0.94 (0.93-0.94)	0.89 (0.88-0.89)	1.02 (1.00-1.03)
2008-2010	1 [Reference]	0.93 (0.93-0.94)	0.85 (0.85-0.86)	1.01 (1.00-1.02)
2011-2013	1 [Reference]	0.93 (0.93-0.94)	0.87 (0.86-0.87)	1.01 (1.00-1.02)
2014-2015	1 [Reference]	0.94 (0.93-0.94)	0.88 (0.88-0.89)	1.01 (0.99-1.02)
Regression model 5[e]				
2005-2007	1 [Reference]	0.94 (0.94-0.95)	0.90 (0.89-0.91)	0.99 (0.98-1.00)
2008-2010	1 [Reference]	0.94 (0.93-0.95)	0.87 (0.86-0.88)	0.99 (0.98-1.00)
2011-2013	1 [Reference]	0.94 (0.94-0.95)	0.88 (0.88-0.89)	0.99 (0.98-1.00)
2014-2015	1 [Reference]	0.95 (0.94-0.95)	0.90 (0.90-0.91)	0.98 (0.97-1.00)

Purnell T, Luo X, Bae S, Johnson M, Crews D, Cooper L, Henderson M, Greer R, Rosas S, Segev D. *JAMA Network Open*. 2020;3(8):e2015003.

1-Year Dialysis Survival by State Medicaid Expansion

Figure 1. Trends in 1-Year Mortality Among Nonelderly Adults Initiating Dialysis, by State Medicaid Expansion Status

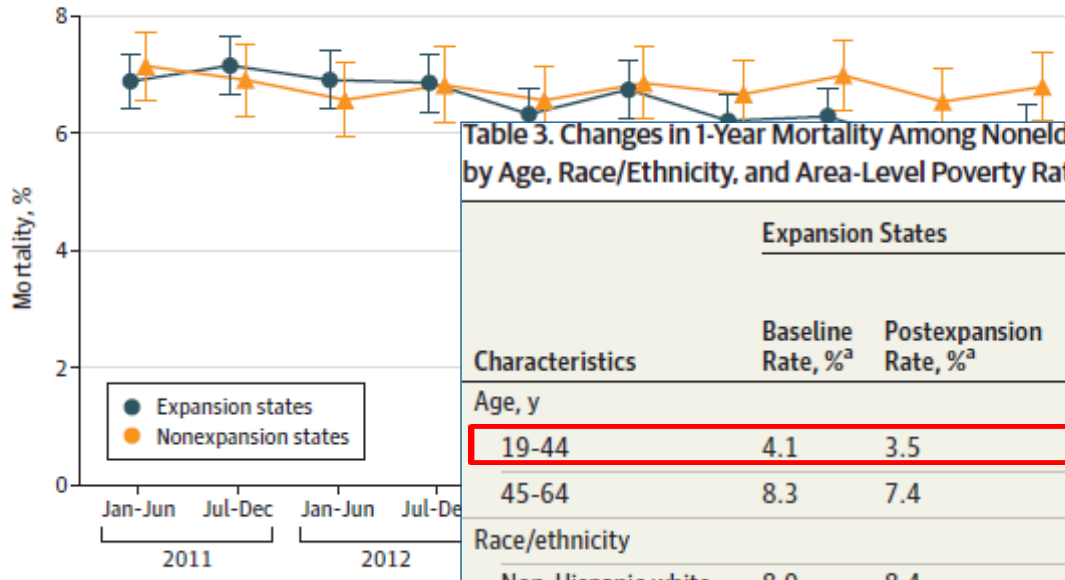
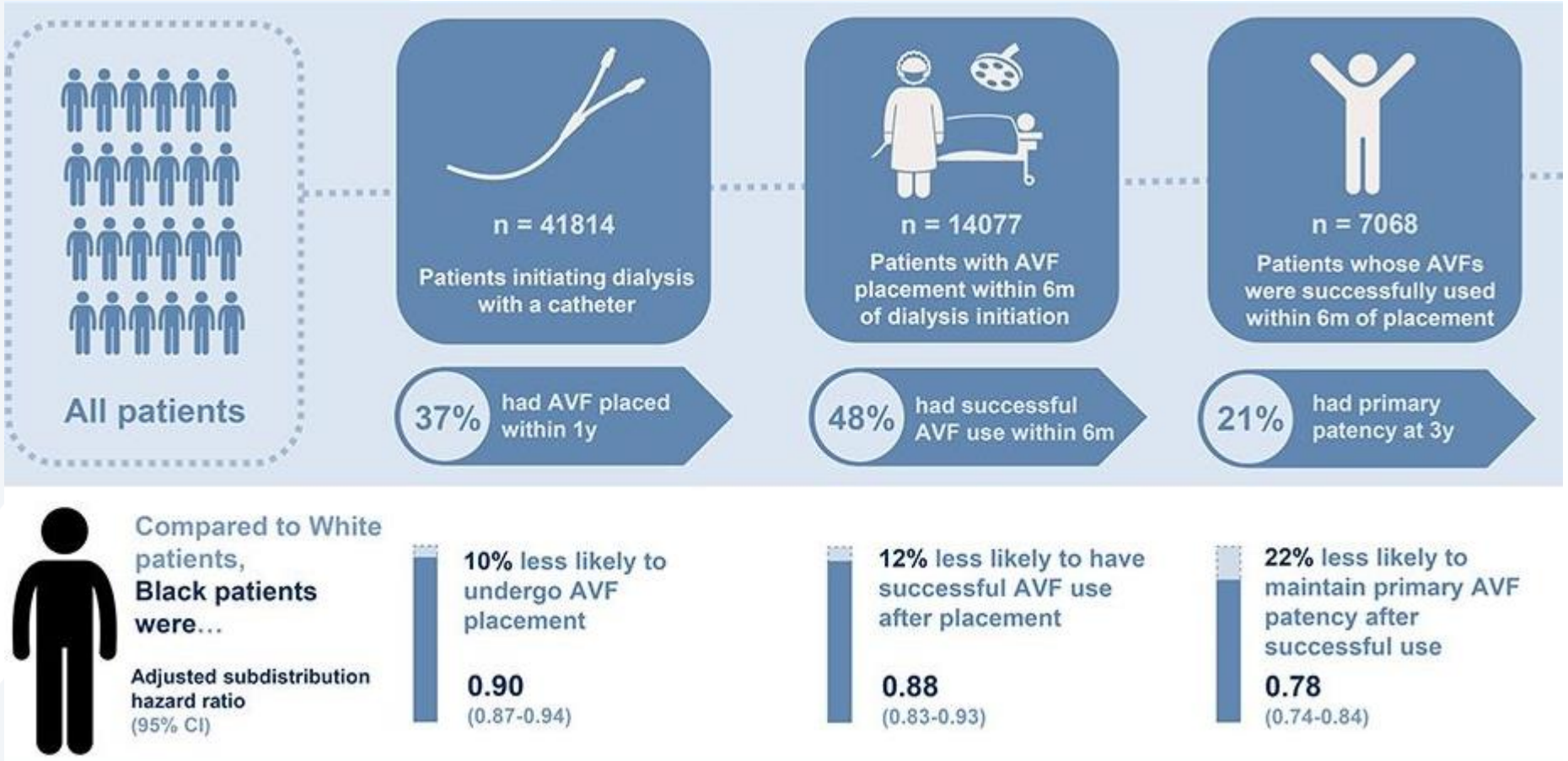


Table 3. Changes in 1-Year Mortality Among Nonelderly Adults Initiating Dialysis After the Affordable Care Act Medicaid Expansion, by Age, Race/Ethnicity, and Area-Level Poverty Rate

Characteristics	Expansion States			Nonexpansion States			Adjusted Difference-in-Differences Estimate, Percentage Points (95% CI)[b]	P Value[c]
	Baseline Rate, %[a]	Postexpansion Rate, %[a]	Change After Expansion, Percentage Points (95% CI)	Baseline Rate, %[a]	Postexpansion Rate, %[a]	Change After Expansion, Percentage Points (95% CI)		
Age, y								
19-44	4.1	3.5	−0.6 (−1.0 to 0.2)	4.3	4.5	0.2 (−0.4 to 0.7)	−1.1 (−2.1 to −0.3)	.01
45-64	8.3	7.4	−0.9 (−1.2 to −0.6)	8.1	7.9	−0.2 (−0.6 to 0.1)	−0.5 (−0.9 to −0.1)	Reference
Race/ethnicity								
Non-Hispanic white	8.9	8.4	−0.4 (−1.0 to 0.1)	8.9	8.8	0.0 (−0.7 to 0.7)	−0.5 (−1.2 to 0.2)	Reference
Non-Hispanic black	7.2	5.8	−1.3 (−2.0 to −0.7)	6.2	6.3	0.0 (−0.5 to 0.6)	−1.4 (−2.2 to −0.7)	.04
Hispanic	4.7	4.3	−0.4 (−1.3 to 0.4)	5.5	4.6	−0.9 (−1.4 to −0.5)	0.4 (−0.6 to 1.3)	.20
Area-level poverty rate[d]								
Below median (16.3%)	6.7	6.1	−0.7 (−1.1 to −0.4)	6.8	6.7	−0.2 (−0.9 to 0.5)	−0.5 (−1.1 to 0.2)	.68
At or above median	7.2	6.5	−0.8 (−1.1 to −0.4)	7.2	7.1	−0.1 (−0.7 to 0.5)	−0.6 (−1.3 to 0.01)	Reference

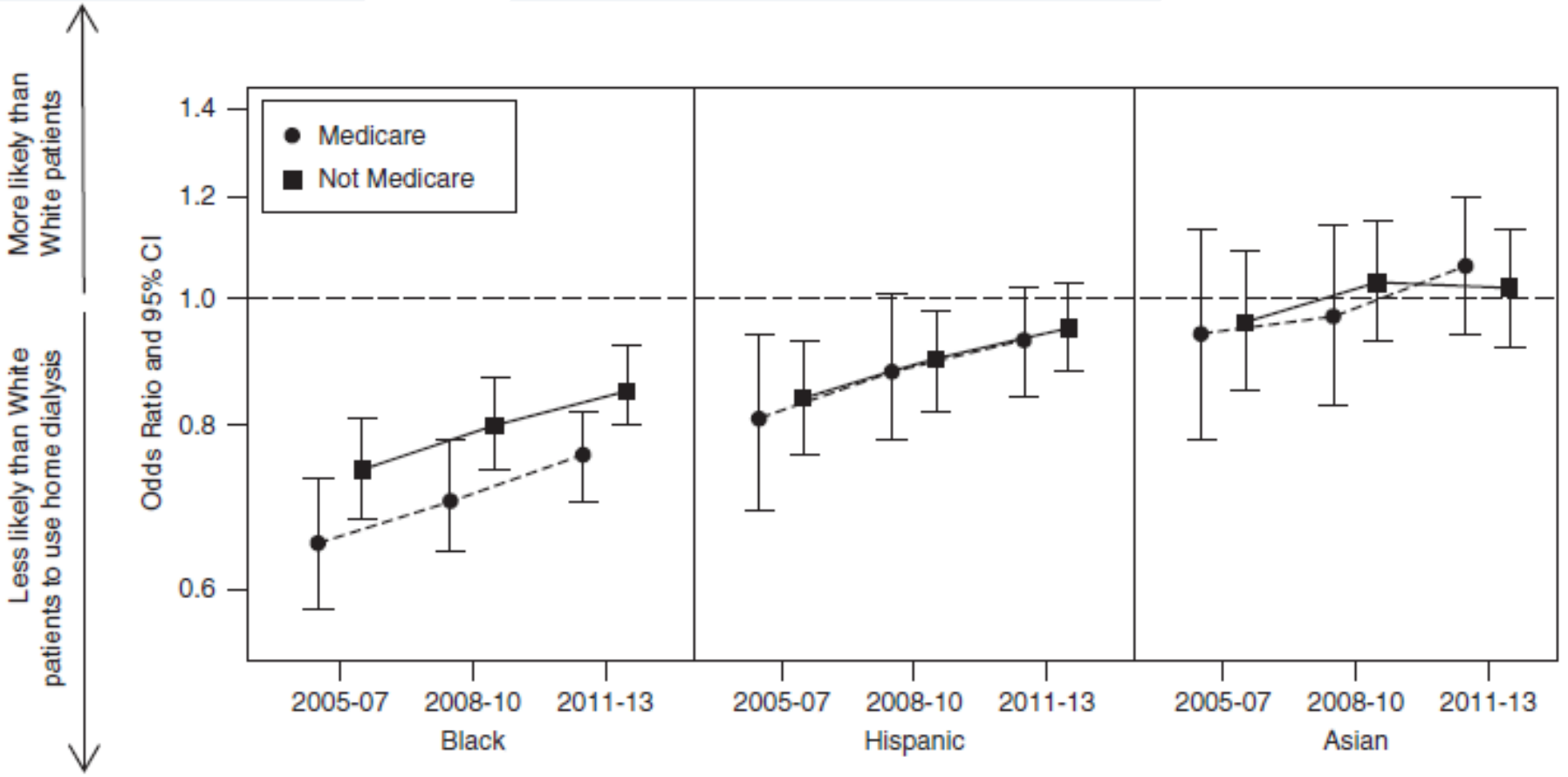
Swaminathan S. et al. JAMA. 2018; 320(21): 2242-2250.

Racial Disparities in AV Fistula Processes of Care



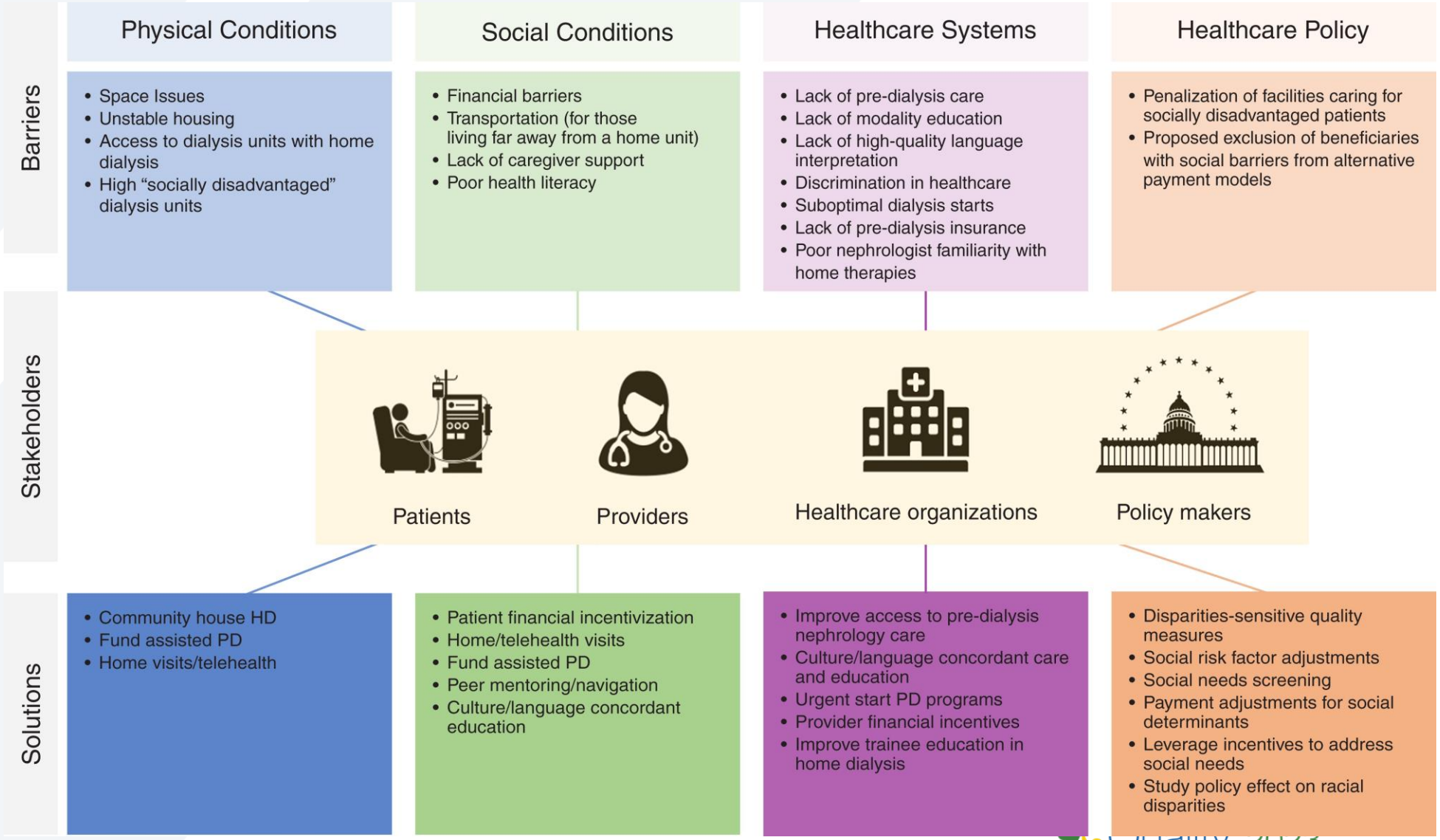
Qian J and Lee T, Thamer M, Zhang Y, Crews D, Allon M. Racial Disparities in the Arteriovenous Fistula Care Continuum in Hemodialysis Patients. *Clin J Am Soc Neph*, 2020 Dec 7;15(12):1796-1803.

Racial/Ethnic Differences in Initiation with Home Dialysis Over Time



Shen J. et al. Clin J Am Soc Nephrol. 2019 (e-published 7/18/19).

Racial and Ethnic Disparities in Home Dialysis Use in the United States: Barriers and Solutions



Rizzolo, K; Cervantes, L; Shen, J. Racial and Ethnic Disparities in Home Dialysis Use in the United States: Barriers and Solutions. JASN 33(7):p 1258-1261, July 2022.

Summary

- Racial, ethnic and income disparities in ESRD are profound
- Numerous opportunities exist to advance equity in ESRD outcomes

Improving Equity in Access to Kidney Transplant

Dinushika Mohottige, MD, MPH
Institute of Health Equity Research at the Icahn School of Medicine at Mount Sinai

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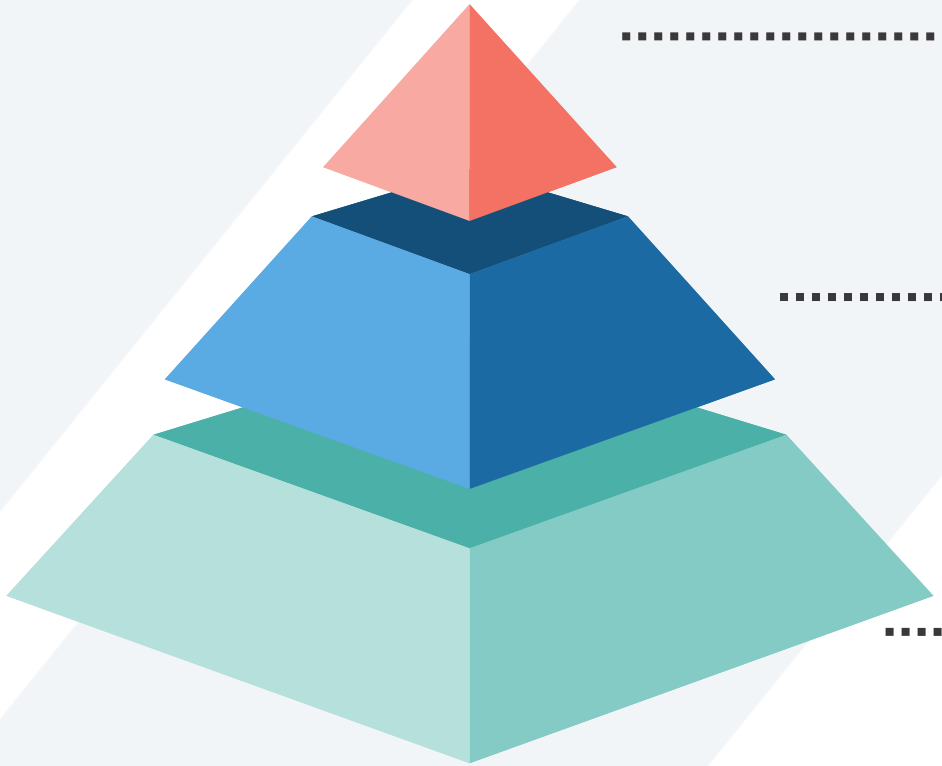
High Demand for the Optimal Treatment



16,500

Individuals received deceased donor kidney transplantation (DDKT)

35,000

Individuals with End-Stage Kidney Disease (ESKD) added to transplant waitlist

786,000

Individuals living with ESKD

7,500 **Individuals died or became too sick to transplant while on the waitlist**

Organ Procurement and Transplantation Network (OPTN), 2019
United States Renal Data System (USRDS), 2020

Time is of the Essence

Understand structural barriers to kidney care and factors influencing kidney health before CKD progresses

Apply an anti-racist, anti-biased equity lens to all transplant decision-making (pre-transplant care, referral, evaluation, listing)

Advocate to disrupt structural barriers, slow eGFR decline, and optimize access to and high-quality discussions of kidney replacement therapy (KRT) options (preemptive and living donor kidney transplantation (LDKT)

Purnell TS, Simpson DC, Callender CO, Boulware LE. Dismantling structural racism as a root cause of racial disparities in COVID-19 and transplantation. *American Journal of Transplantation.* 2021;n/a(n/a).

Structural Racism

Inequity in health care access and delivery

Environmental, and occupational inequity

Targeted marketing of health-harming products

Psychosocial stressors And

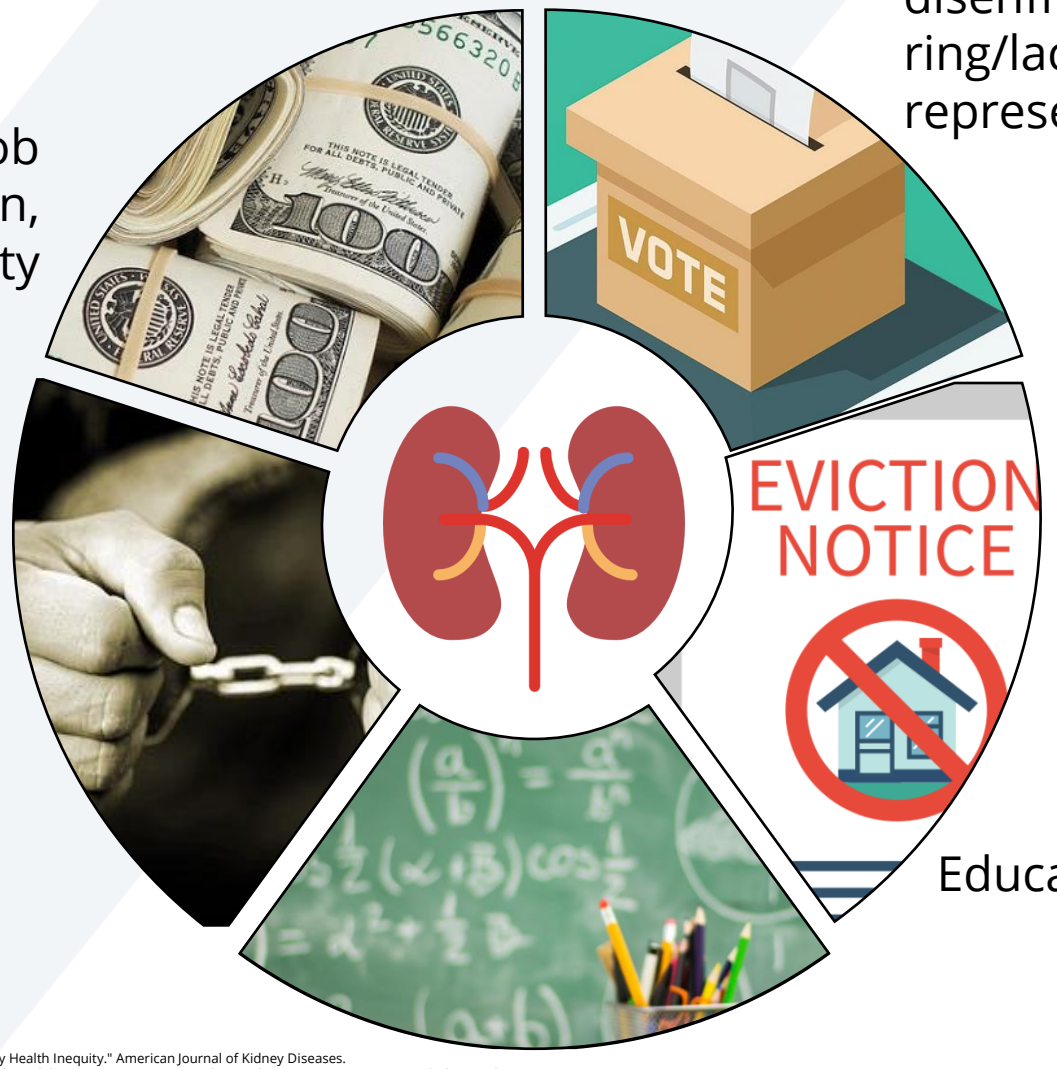
Neighborhood resources: redlining and disinvestment

Mohottige, D., et al. (2021). "Time to Repair the Effects of Racism on Kidney Health Inequity." American Journal of Kidney Diseases.
Purnell, T. S., et al. (2021). "Dismantling structural racism as a root cause of racial disparities in COVID-19 and transplantation." American Journal of Transplantation **n/a**(n/a).
Bailey ZD, Krueger N, Agénor M Graves J, Laos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions. The Lancet 2017; 389(10077): 1453-1463.

Structural Racism (cont'd)

Economic inequity, job discrimination, job segregation, wage inequity

Voter disenfranchisement/gerrymandering/lack of political representation



Criminalization, policing and neighborhood safety

Housing insecurity/unregulated gentrification and racialized disinvestment

Educational inequity

Mohottige, D., et al. (2021). "Time to Repair the Effects of Racism on Kidney Health Inequity." American Journal of Kidney Diseases.
Purnell, T. S., et al. (2021). "Dismantling structural racism as a root cause of racial disparities in COVID-19 and transplantation." American Journal of Transplantation **n/a**(n/a).
Alson JG, Robinson WR, Pittman L, Doll KM. Incorporating Measures of Structural Racism into Population Studies of Reproductive Health in the United States: A Narrative Review. Health EquBailey ZD, Krueger N, Agénor M Graves J, Laos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions. The Lancet 2017; 389(10077): 1453-1463.
Hardeman RR, Homan PA, Chantarat T, Davis BA, Brown TH. Improving The Measurement Of Structural Racism To Achieve Antiracist Health Policy. Health Affairs. 2022;41(2):179-86.

Cascading Barriers

Pre-transplant care

Referral

Evaluate

Waitlist

Pre-transplant care

- Disparate co-morbidities
- Poorer access to care
- Poorer CKD awareness
- Suboptimal CKD discussions

Referral for transplant

- Racialized eGFR equations
- Structured inequities in insurance, housing
- Disparate referral patterns and transplant education

Evaluation

- Prior discrimination
- Bias in evaluation process including implementation of key criteria (e.g. adherence, substance use)

Waitlisting

- Longer time to waitlist and completion of key elements for evaluation
- Disparities in reasons for waitlist inactivation
- Structured inequities impede evaluation steps

Purnell TS, Simpson DC, Callender CO, Boulware LE. Dismantling structural racism as a root cause of racial disparities in COVID-19 and transplantation. *American Journal of Transplantation.* 2021;n/a(n/a).
Mohottige, D., McElroy, L., and Boulware LE. (2021). "A Cascade of Structural Barriers Contributing to Racial Kidney Transplant Inequities." Advances in chronic kidney disease 28(6): 517-527.

20+ Years of Disparity

Appropriateness Category and Indicator of Access*	Black Women	White Women	P Value	Black Men	White Men	P Value	All Blacks	All Whites	P Value	All Patients
Appropriate										
No.	34	72		37	80		71	152		223
Referred (%)										
Chart review	94.1	97.2	0.43	86.5	98.8	0.005	90.1	98.0	0.008	95.5
Survey†	81.5	98.3	0.005	76.7	98.4	<0.001	79.0	98.4	<0.001	92.1
Placed on waiting list (%)	81.8	82.5	0.93	61.1	90.3	<0.001	71.0	86.7	0.007	81.4
Received transplant (%)	17.7	44.4	0.007	16.2	58.8	<0.001	16.9	52.0	<0.001	40.8

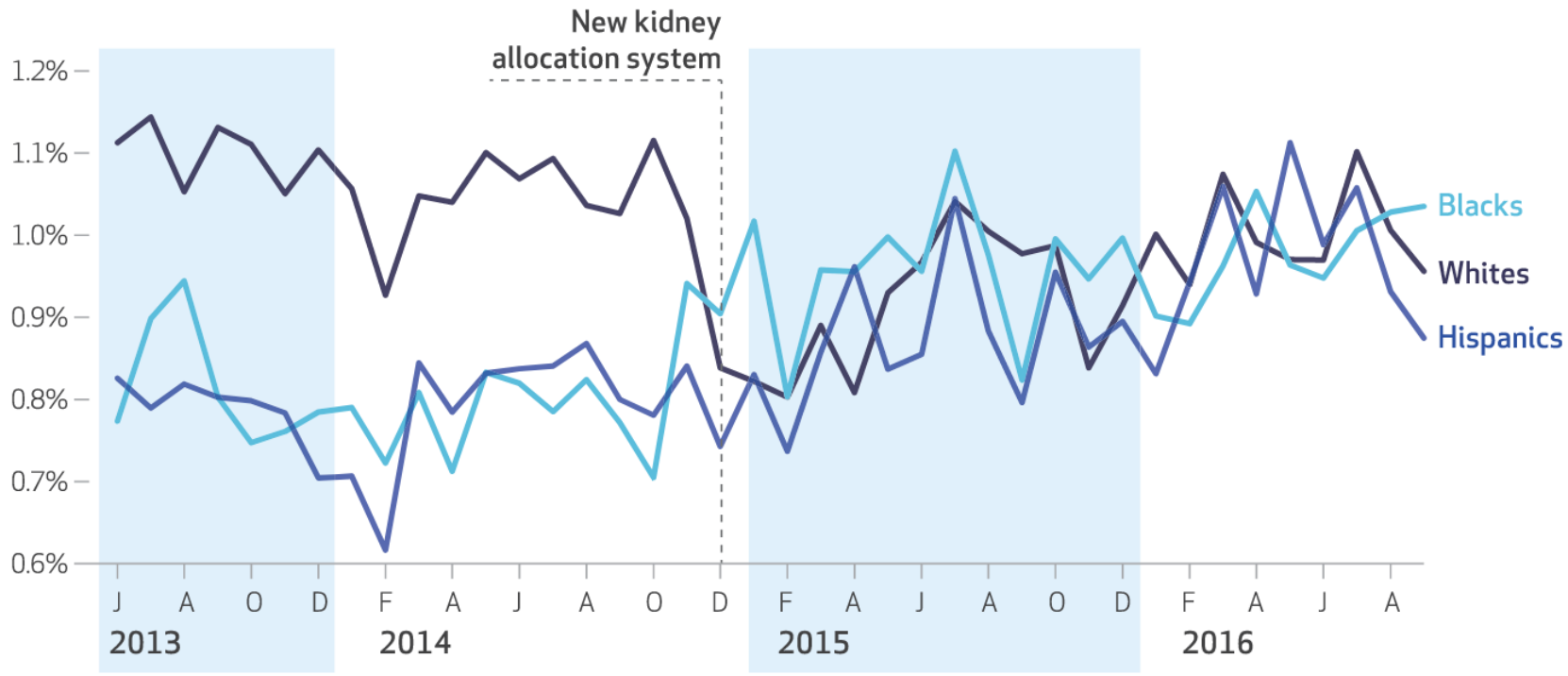
In 2000, among those appropriate for transplant, Black individuals were less likely to be referred for evaluation, placed on waitlist, **or complete (52% vs. 16.9%) transplant** than White counterparts.

Epstein et al. NEJM 343(21): November 2000

Kidney Allocation System (KAS) Helps Waitlist Disparity

EXHIBIT 1

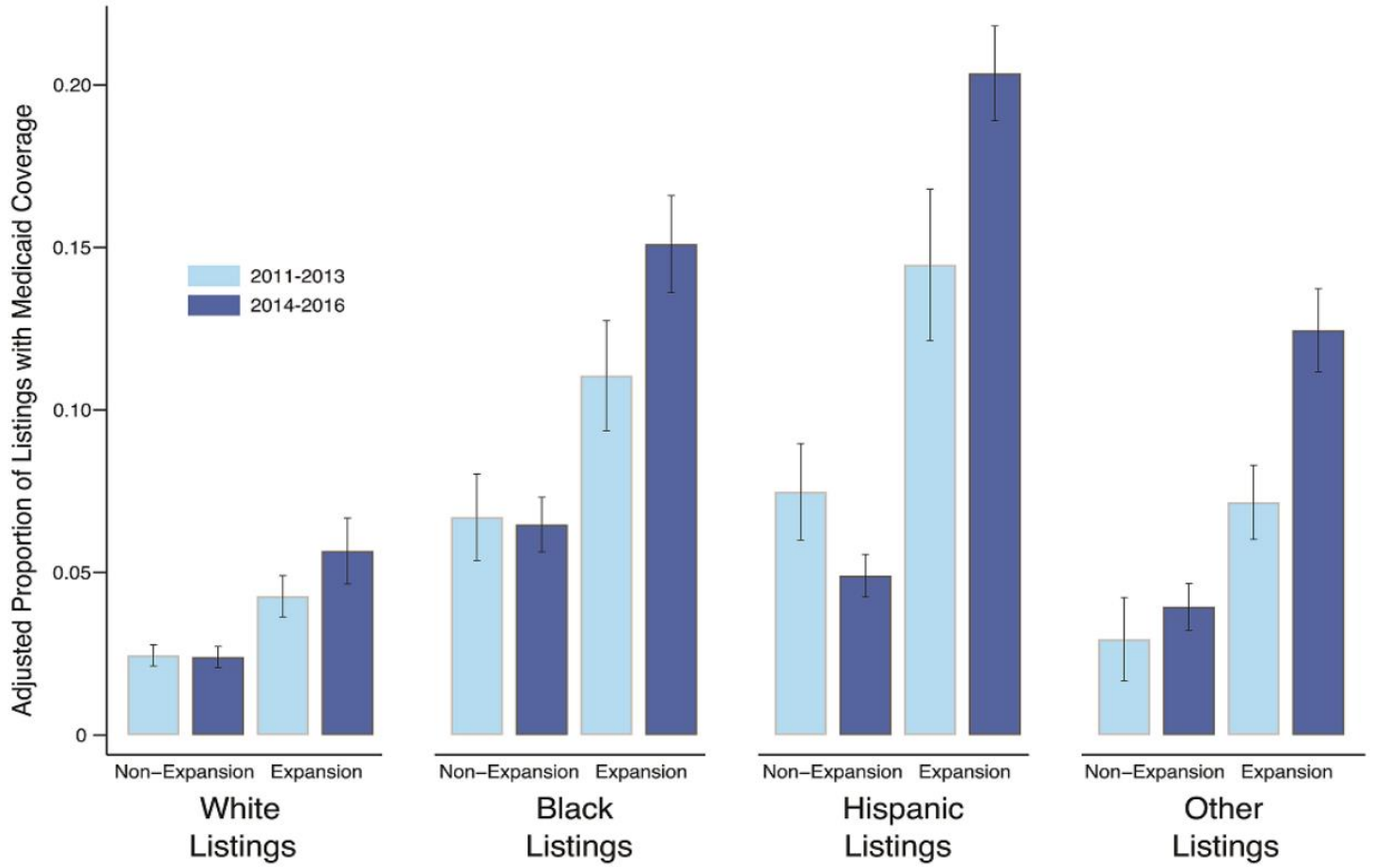
Average monthly percentages of waitlisted US patients who received a deceased-donor kidney transplant during June 2013–March 2016, by race/ethnicity



Black-White disparities in receipt of DDKT **narrowed** post-KAS

Melanson et al. Health Affairs. 36(6): June 2017

Affordable Care Act (ACA) Helps Mitigate

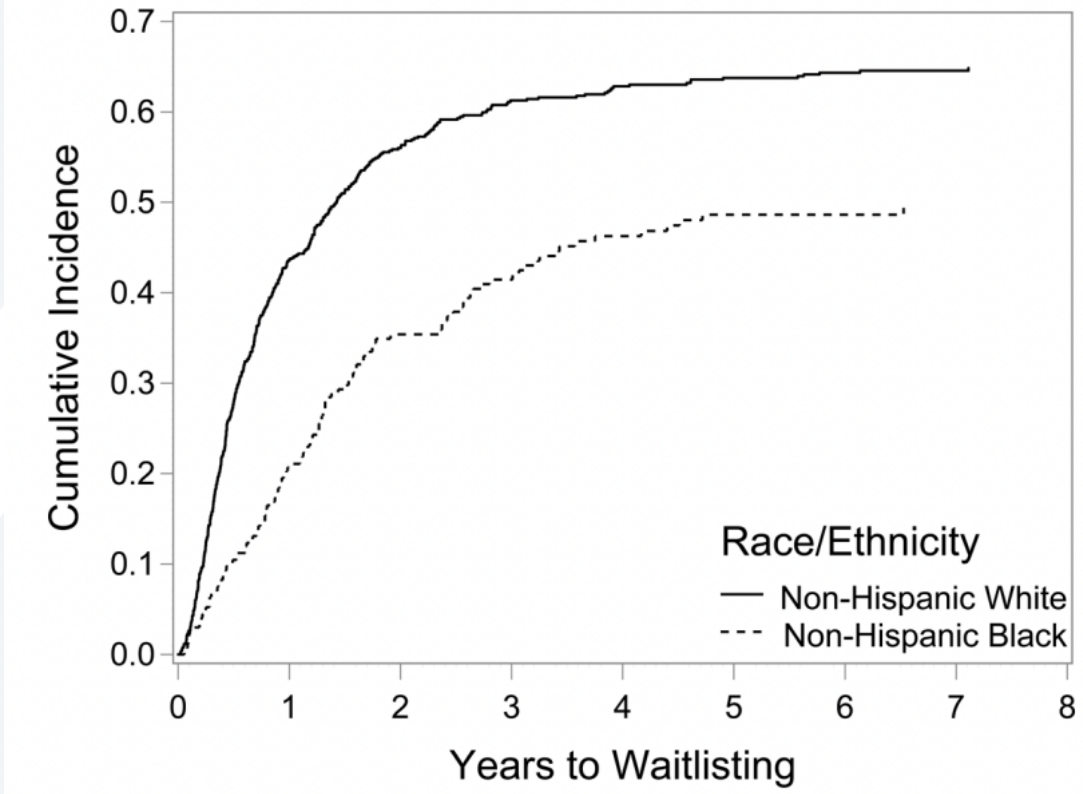


Medicaid expansion states saw **larger increases in Medicaid coverage among racial and ethnic minority listed** patients compared to White individuals

OPTN, March 2020

Harhay, Meera N., et al. "Association between medicaid expansion under the affordable care act and preemptive listings for kidney transplantation." *Clinical Journal of the American Society of Nephrology* 13.7 (2018): 1069-1078

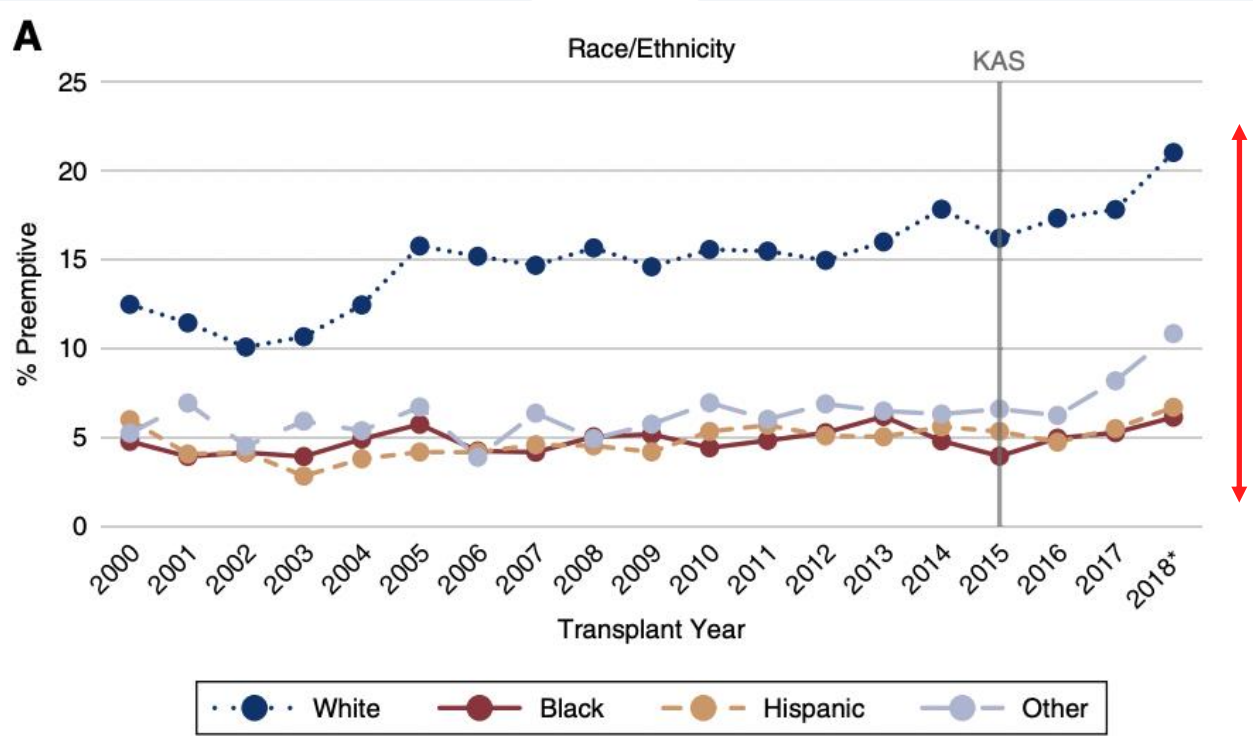
Waitlist and Preemptive Disparities



Racial disparities in preemptive transplant listing persist even after accounting for social determinants of health (SDOH) factors

Ng YH...Myaskovsky L. Does Racial Disparity in Kidney Transplant Waitlisting Persist After Accounting for Social Determinants of Health? Transplantation. 2020 Jul;104(7):1445-1455
Joshi, S., et al. (2013). "Disparities Among Blacks, Hispanics, and Whites in Time From Starting Dialysis to Kidney Transplant Waitlisting." Transplantation 95(2).

Widen Pre-Transplant Disparity



Racial and ethnic disparities in preemptive DDKT receipt **widen post-KAS**

Lower educational attainment

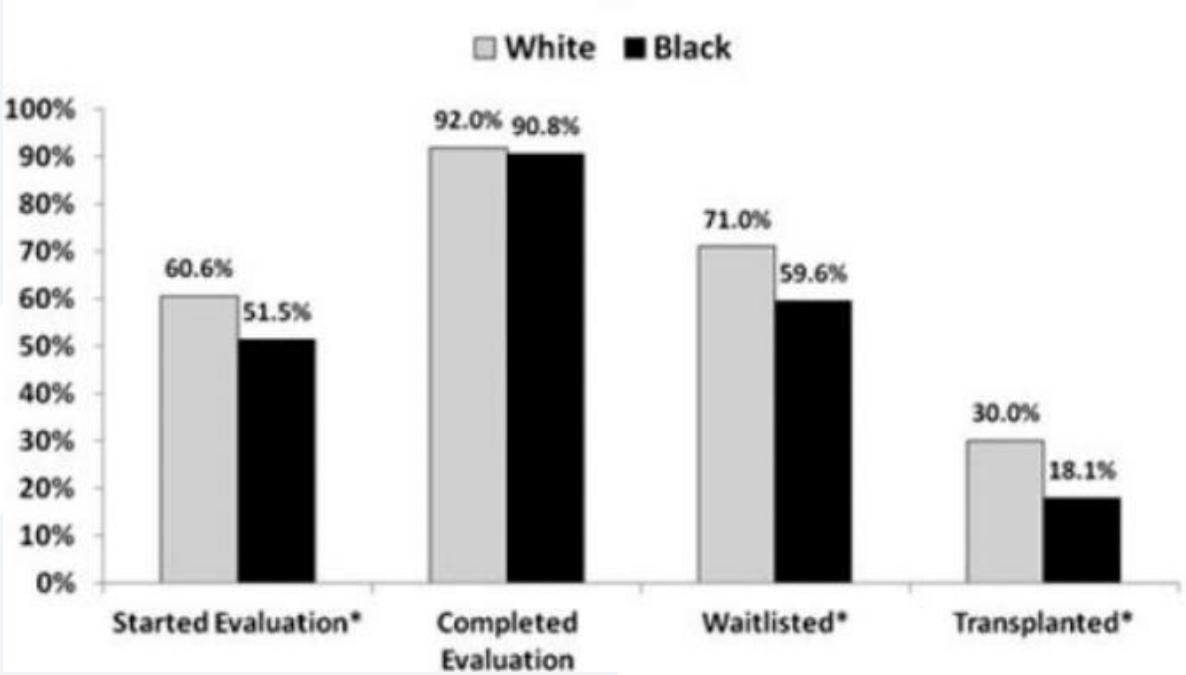
Public insurance

Black or Hispanic

Ng YH,et al. Does Racial Disparity in Kidney Transplant Waitlisting Persist After Accounting for Social Determinants of Health? Transplantation. 2020 Jul;104(7):1445-1455.
Gander JC, Zhang X, Plantinga L, Paul S, Basu M, Pastan SO, Gibney E, Hartmann E, Mulloy L, Zayas C, Patzer RE. Racial disparities in preemptive referral for kidney transplantation in Georgia. *Clinical transplantation.* 2018;32(9):e13380.
King, Kristen L., et al. "Trends in disparities in preemptive kidney transplantation in the United States." *Clinical Journal of the American Society of Nephrology* 14.10 (2019): 1500-1511

Delays at Every Step

Proportion of Black and White patients completing each transplant step

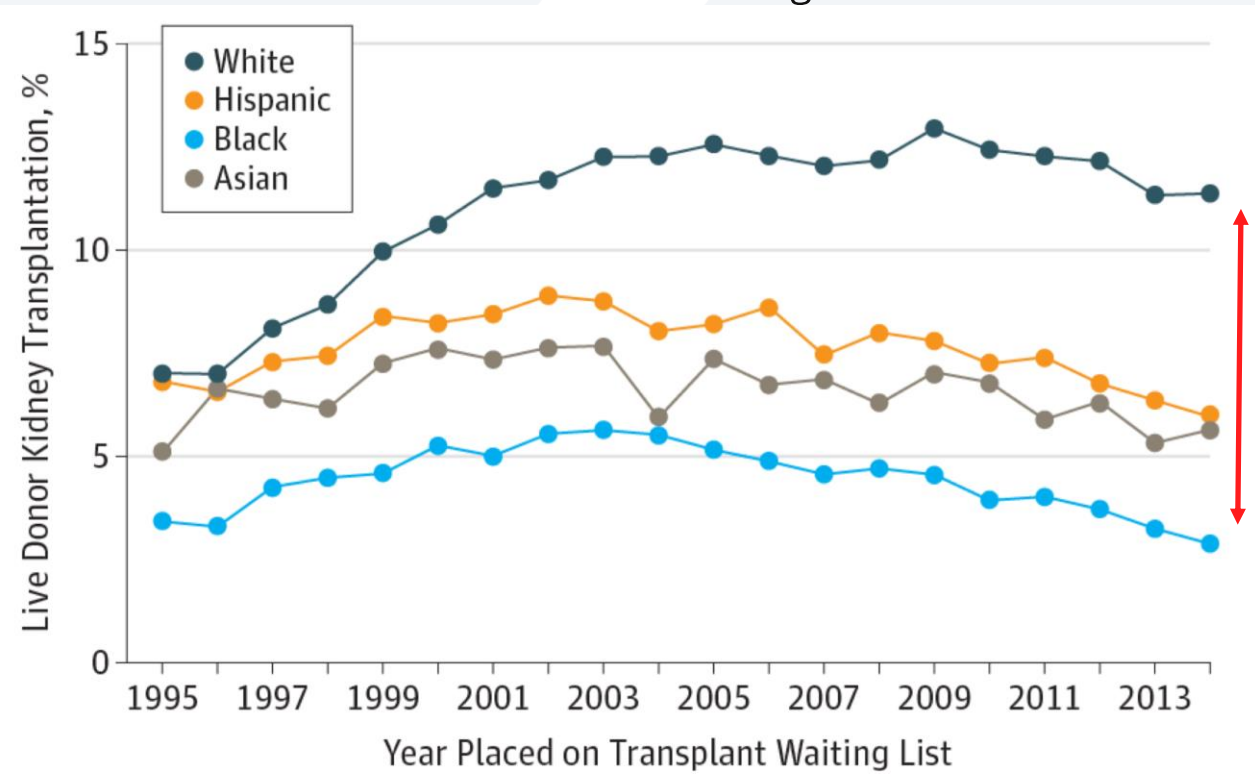


A lower proportion of Black individuals complete each step in the process, and experience **longer delays** than White individuals at each step

1Patzer RE, Perryman JP, Schrager JD, et al. The role of race and poverty on steps to kidney transplantation in the Southeastern United States. *Am J Transplant.* 2012;12(2):358-368.

Living Donor Kidney Transplant (LDKT) Disparities Grow

Cumulative LDKT incidence declined among AA between 1995-2014



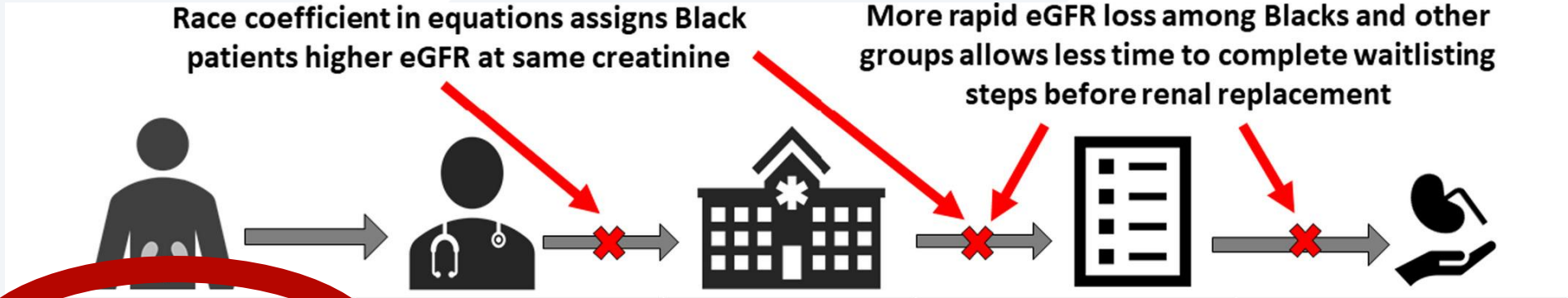
Association of Race and Ethnicity With Live Donor Kidney Transplantation in the United States From 1995 to 2014

Tanjala S. Purnell, PhD, MPH[1,2,3,4]; Xun Luo, MD, MPH[1]; Lisa A. Cooper, MD, MPH[2,3,4,5]; Allan B. Massie, PhD[1,2]; Lauren M. Kucirka, MD, PhD, ScM[1,2]; Macey L. Henderson, JD, PhD[1]; Elisa J. Gordon, PhD, MPH[6]; Deidra C. Crews, MD, ScM[4,7]; L. Ebony Boulware, MD, MPH[8]; Dorry L. Segev, MD, PhD[1,2]

Racial disparities in LDKT have **widened**

Purnell TS, Luo X, Cooper LA, Massie AB, Kucirka LM, Henderson ML, Gordon EJ, Crews DC, Boulware LE, Segev DL. Association of Race and Ethnicity With Live Donor Kidney Transplantation in the United States From 1995 to 2014. *Jama.* 2018;319(1):49-61

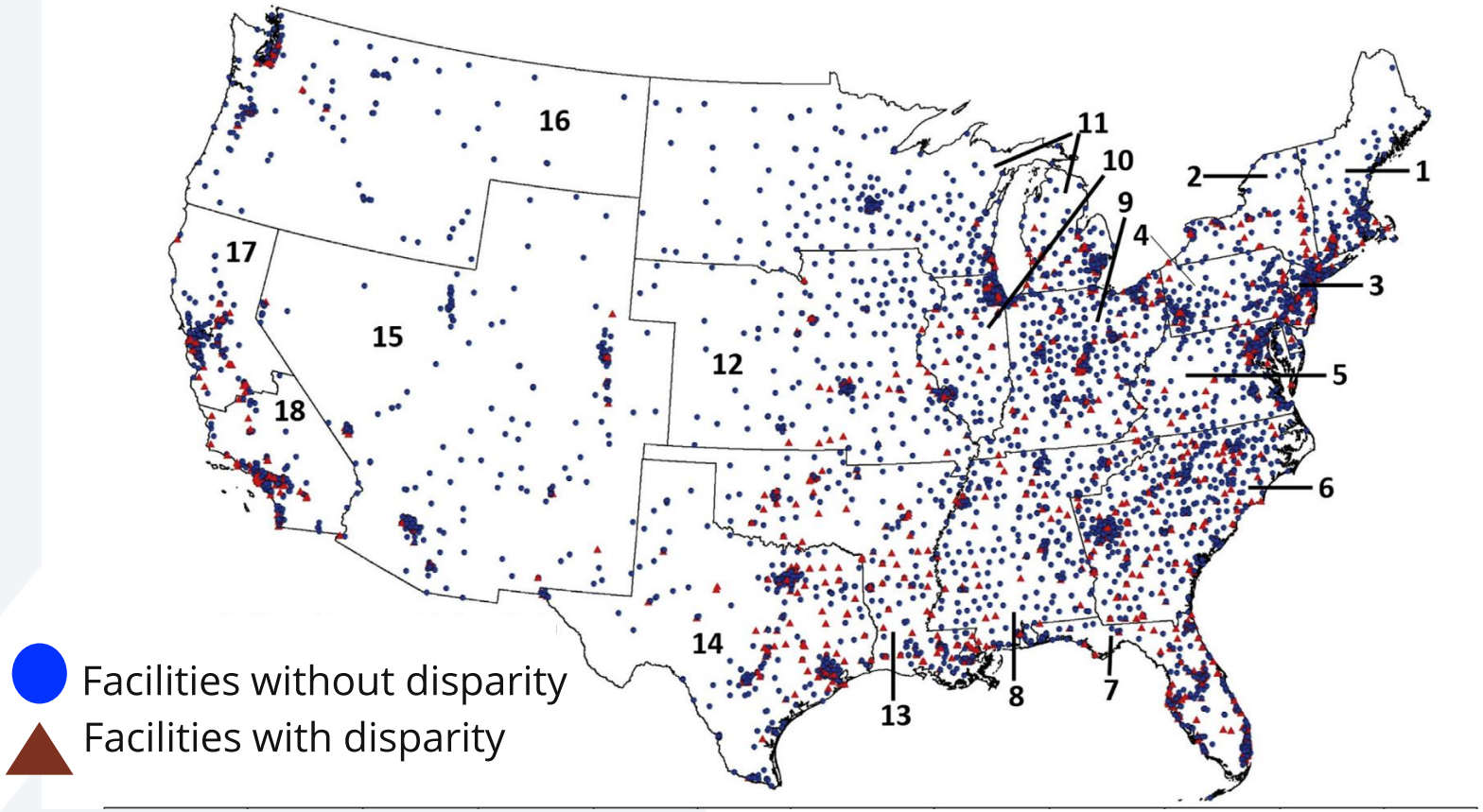
Barriers to Early Transplantation



Patient Level Barriers for Individual with CKD	Provider Level arriers: Nephrologist, Primary Care Doctor	Transplant Center Level Barriers	Barriers to Pre-emptive Waitlisting	Barriers to Preemptive Transplantation
resources to navigate health care system	Limited provider availability	Insurance barriers to transplant center access	Lack of standardization in requirement for eGFR <20 ml/min to gain allocation priority	First-come, first-served allocation system favoring patients waitlisted prior to dialysis
Low health literacy related to CKD and urgency in transplant evaluation	Lack of understanding of urgency in transplant referral	Lengthy transplant evaluation and counseling process	Center disincentives to rapid waitlisting: financial, admin burdens	

Reese PP, Mohan S, King KL, Williams WW, Potluri VS, Harhay MN, Eneanya ND. Racial disparities in preemptive waitlisting and deceased donor kidney transplantation: Ethics and solutions. Am J Transplant. 2021 Mar;21(3):958-967

Hemodialysis Facility Disparities



Race disparities in waitlisting are **widespread**

Few differences between units with and without disparity

Dialysis for-profit status associated with less DDKT receipt and waitlisting across all groups

Gander JC, Zhang X, Ross K, Wilk AS, McPherson L, Browne T, Pastan SO, Walker E, Wang Z, Patzer RE. Association Between Dialysis Facility Ownership and Access to Kidney Transplantation. JAMA. 2019 Sep 10;322(10):957-973. Retracted and republished in: JAMA. 2020 Apr 21;323(15):1509-1510.
Gander JC et al. KI Reports: 2017

Structural Competency

Individual behaviors (medication adherence) — — are a product of an individual's sociopolitical context

Avoid a lens which places blame or full responsibility on the individual

Transplant disparities

SDOH inequalities

(Poverty, housing education inequality)

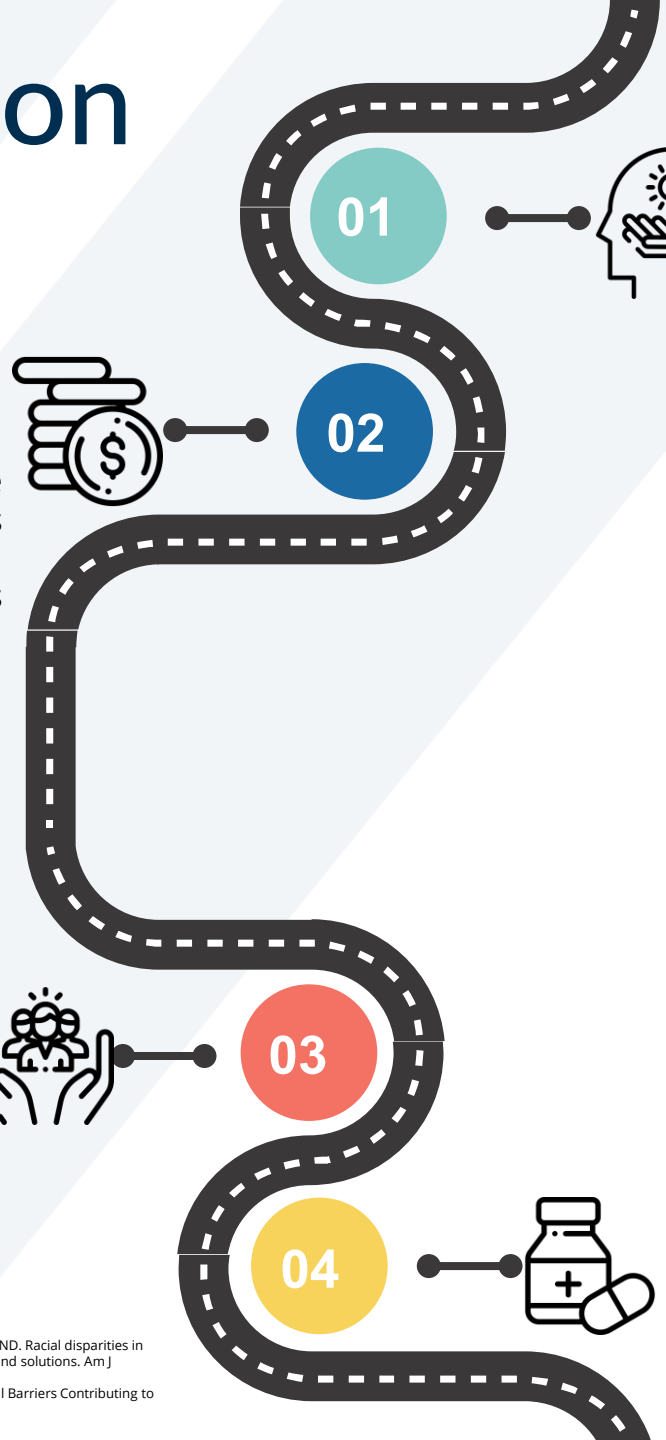
Social Structures

Policies, Economic Systems and Social hierarchies

(racism, sexism, ableism, transphobia…)

Metzl, J. M., and H. Hansen. 2014. "Structural competency: theorizing a new medical engagement with stigma and inequality." *Soc Sci Med* 103:126-133. doi: 10.1016/j.socscimed.2013.06.032.

Reform Evaluation Roadblocks



Psychosocial evaluation

Train providers to be structurally competent, trauma-informed care that is anti-racist and anti-biased

- Enhance equitable access to fulfill eval requirements
- Transparency
- Accountability

Financial evaluation

Promote SDOH and health care access equity Incentivize equity-focused centers
Payment models for reform
Reduce burdens on donors, caregivers + recipients

Social support

Apply flexibility, structurally competent, anti-racist lens

Partner with community-based organizations and incentivize resources for caregivers and patients navigating the process

“Adherence” and Suitability

Reframe “adherence”

Advance policy reform that addresses structural barriers

Incentivize programs that mitigate key evaluation barriers (transport, linkage to consultation/imaging)

Reese PP, Mohan S, King KL, Williams WW, Potluri VS, Harhay MN, Eneanya ND. Racial disparities in preemptive waitlisting and deceased donor kidney transplantation: Ethics and solutions. Am J Transplant. 2021 Mar;21(3):958-967
Mohottige, D., McElroy, L., and Boulware LE. (2021). "A Cascade of Structural Barriers Contributing to Racial Kidney Transplant Inequities.” ACKD

Mitigate Barriers to Kidney Health Equity

Solutions to embed an equity lens in all we do

Embed equity lens

Eliminate sources of bias in candidacy evaluations (e.g. social support, “adherence issues” in TXP eval) and embed and embed trauma informed practice

Invest in structural solutions

Apply an equity lens to existing and proposed policies (dialysis reimbursement); fund structural interventions for patients and communities, partner with CBOS

Enhance trustworthiness

Earn trust and actively dismantle barriers to trustworthiness. Engage patient and community stakeholders throughout research with attention to transparency. Center patient expertise.

Embed anti racism into care systems

Develop electronic health tools that bypass provider biases; analyze data regarding outcomes, referrals etc using equity lens across race, etc.

Thank You

Our generous patient and caregivers

NATIONAL KIDNEY FOUNDATION®

Mount Sinai

Duke UNIVERSITY

Reach Equity Career Development Award, Supported by NIMHD under award number U54MD012530
Mario Family Foundation Award
National Kidney Foundation Young Investigator Award

Prior Funding: 2T32-DK007731-22, Duke Stead Grant

CMS Quality 2023 Conference
Building Resilient Communities:
Having an Equitable Foundation for Quality Healthcare

Innovative Strategies to Coordinate Holistic Treatment Approaches for People Living with Kidney Disease

Shika Pappoe, MD, MPH, MBA
Chief Medical Officer
Strive Health

CMS Quality 2023 Conference
Building Resilient Communities:
Having an Equitable Foundation for Quality Healthcare

Key Objectives

- CKD/ESRD patients are complex and require specialized integrated care that accounts for social determinants of health (SDOH) factors
- There is increased interest from payors, providers and policy makers in how SDOH impact health outcomes
- Evolving reimbursement programs are allowing the kidney space to move towards value-based care and consequently providing opportunities to address SDOH with innovative solutions
- Key capabilities required to be successful in value-based kidney care
- Holistic Care
    1. Care coordination with integrated specialized teams
    2. Home and Community Care
    3. Technology and Analytics that support Population Health Strategies

Social Determinants of Health and Kidney Disease

A disproportionate number of individuals from marginalized communities face healthcare disparities

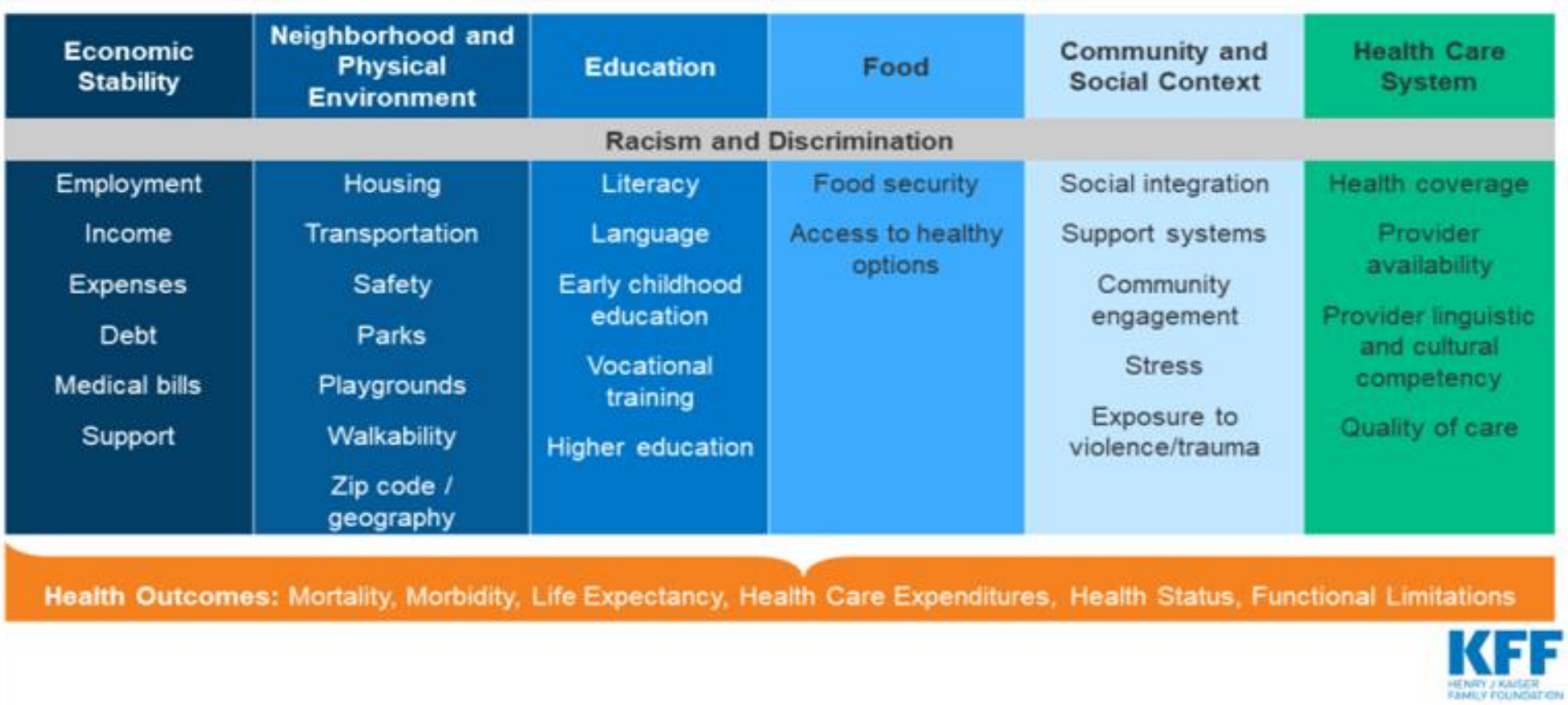
- Blacks/African Americans make up about 13% of three population and account for 35% of the people with kidney failure in the US
- Since 2000, the number of Hispanics with kidney failure has increased more than 70%

Underlying risk factors for development of renal disease, progression, and onset of complications

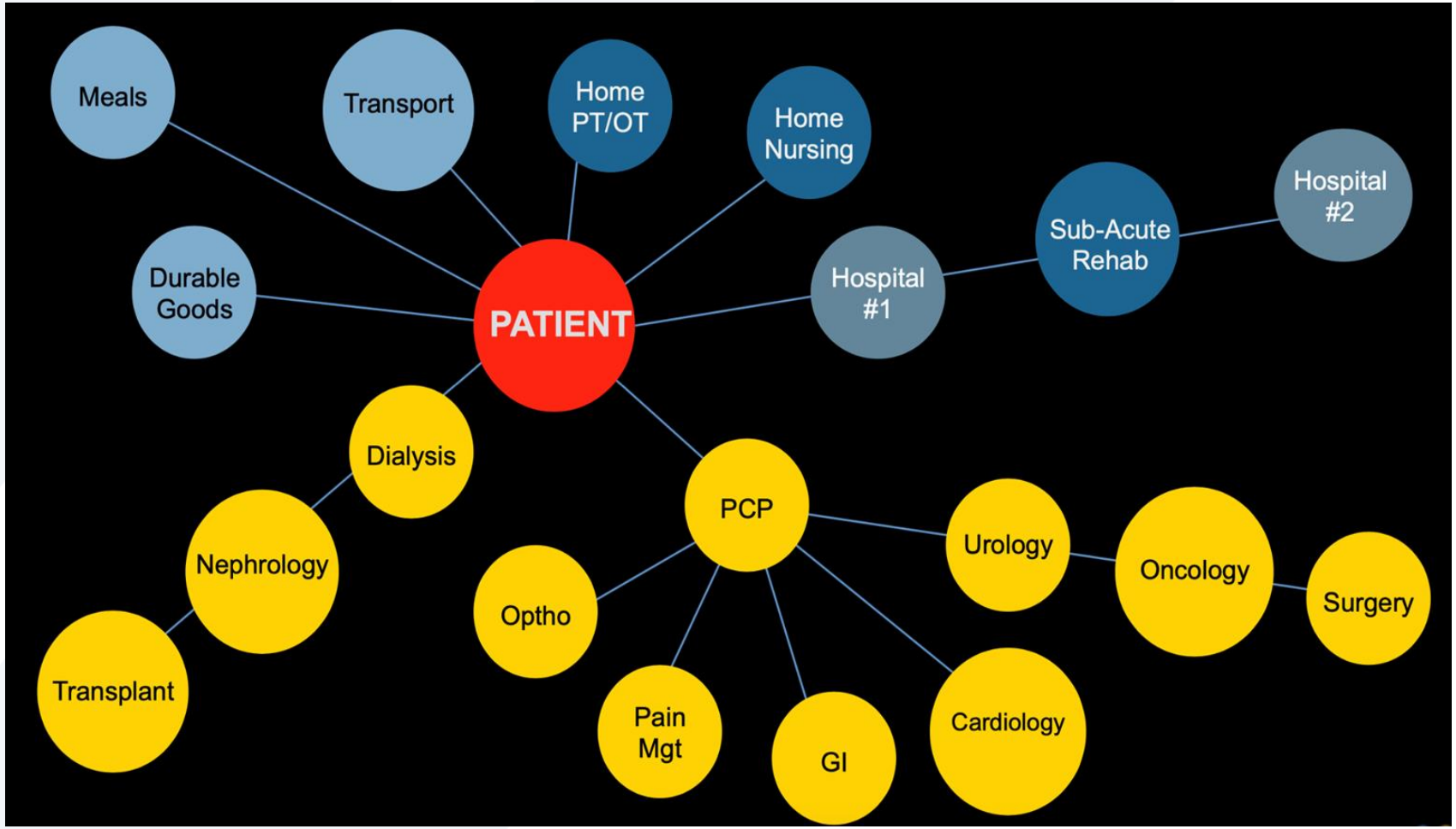
- Higher rates of hypertension (HTN) and diabetes (DM)
- Poor access to insurance and medical care
- Genetics and biology
- Social determinants of health
- Racism

Health Care Disparities are worsening

Social and Economic Factors Drive Health Outcomes



Current State of Kidney Care



Innovations to Address Social Determinants of Health

Societal & Institutional Change

- The World Health Organization has identified key tenets to address SDOH
  - Developing a workforce trained in and able to promote public awareness about SDOH
  - Tackling the inequitable distribution of power, money, and resources
  - Improving the conditions of daily life

Provider Level Change

- Evolving payment models allow us to reimagine how we care for patients
- Value Based Kidney Care organizations have incorporated innovative capabilities to address SDOH

Value Based Kidney Care

In the Old World of Nephrology:

- Patients crash into kidney care
- Focus is on ESRD care and management
- Kidney care is siloed and fragmented
- Dialysis centers are the hubs of care

In the New World of Nephrology :

- Preventative care and identifying CKD patients earlier is prioritized and incentivized
- Renal care has to be integrated and collaborative
- Nephrologists holistically manage renal patients, with a data-driven view of their patients' interactions with the broader system
- Physicians leverage data and technology to create workflow efficiencies and rich data insights
- Physician approach care using a population health framework with SDOH priorities
- Increased rates of home dialysis, transplantation and improved patient experience and outcomes

How Value Based Care Can Impact SDOH

Holistic Care

Early identification

Focus on clinical and non-clinical barriers to care

Strong relationships with patients and families.

Empower patients

Coordinated Care

Specialized disease and care management

Optimize comanagement and communication

Team based care & frequent touchpoints

Support navigation of the complex kidney care ecosystem

Integration with local providers

Home & Community Care

Provider offices

Home / SNF / LTAC / Hospitals

Dialysis centers focusing on home modalities

Mobile & Virtual Care

Technology & Analytics

Integrated data platform

Predictive Analytics

Real-time alerts

Quality Metrics

Population Health/Clinical Strategy

A Specialized Interdisciplinary Team (IDT) Delivers High Touch Holistic Care

Renal NPs - NPs Deliver high-touch care at the top of their license

Care Managers - Extension of the NP. Focused on coordination and education.

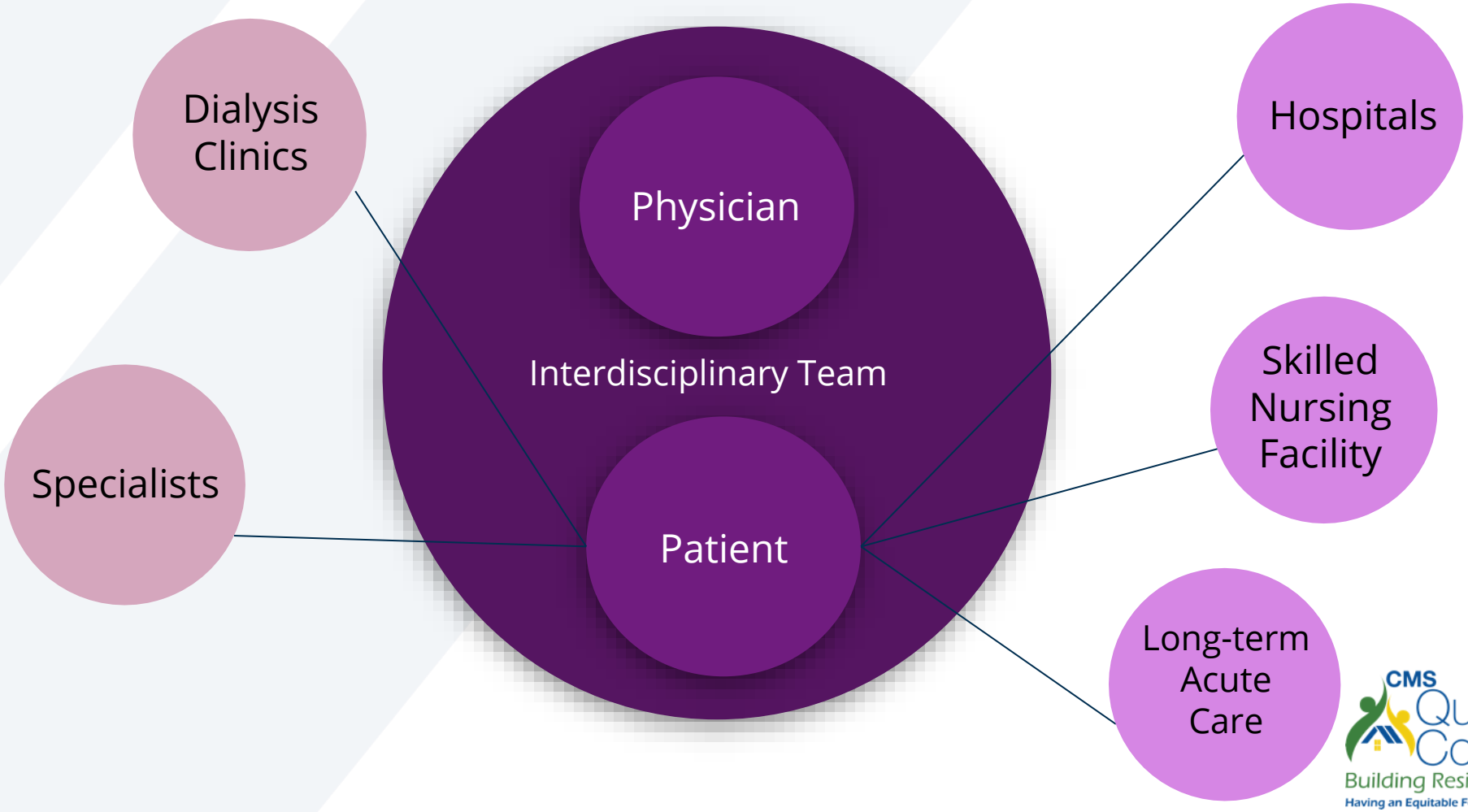
Care Coordinators - Focused on coordination

Clinical Pharmacists - Support the MD and NP in management of medications

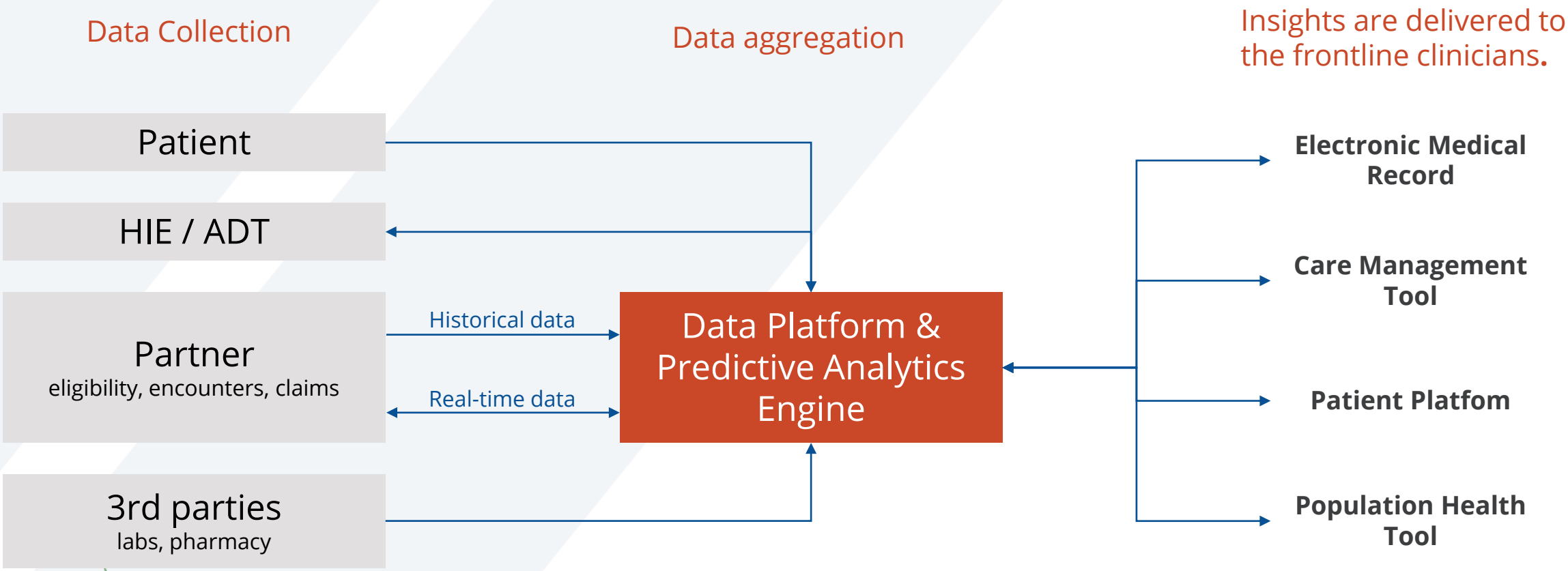
Licensed Social Workers - Focus on non-clinical barriers to care

Dieticians - Deliver medical nutrition therapy

The IDT Integrates with Providers Within the Care Ecosystem to Provide Wraparound Services and Coordinated Care



Technology Supports the IDT with Clinical Insights



How Value Based Care Can Impact SDOH

Identification of high-risk patients

- Geographic - Social Deprivation Index, Social Vulnerability Index, Area Deprivation Index, Custom Scores
- Individual – patient-reported data, risk adjustment codes

Risk Stratification Tools

- Incorporate SDOH variables and other important variables

Data - Collection

- Screening Tools
- Evaluation and Management (E&M) Codes
- ICD 10 Code Expansion

Data - Actionable Insights

- Connect patients with resources
- Close the loop to ensure patients engage and benefit from resources
- Refine Data Science Tools
- Quality improvement – Plan-Do-Study-Act (PDSA) cycles to improve the care model

Holistic services that are patient-centered

Challenges to Driving Change

- There is a spectrum of value-based care (VBC) programs and some argue that the jury is still out on the effectiveness of VBC
- Risk adjustment has gaps
  - Unintended consequences when SDOH are not fully accounted for
  - Lack of data can bias services to lower-risk individuals
  - Providers with higher-risk practices can be penalized for factors out of their control
- Need to understand which services within VBC are impactful and which can be scaled
- Early Initiatives and quality metrics are process driven
- Innovation via technology may worsen disparities
  - Machine learning and AI can incorporate biases
  - Access issues
- Governmental and societal challenges remain

Questions?