

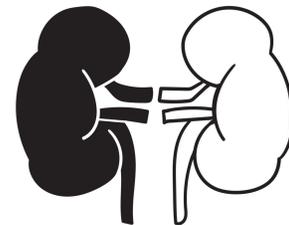


Advancing Kidney Health Equity

Presenters: Marci Laragh MD, Bijal Jain MD
Jesse Brown for Black Lives

The Case of Mr. C

- Mr. C is a 45 year old Veteran with a past medical history of obesity, diabetes, hypertension, and chronic kidney disease (CKD) who presents to his primary care physician for routine follow up. He self-identifies as a Black man and others would also identify him as Black due to his complexion. He was born to a white mother and Black father. Until recently, the NKF and other leading kidney experts recommended that a race coefficient was applied when calculating his estimated kidney function. For Mr. C, the race coefficient can have grave consequences.





Presentation outline

- Part 1
 - Clarify that Race is a social construct not biologically based
 - Define biological racism and give a brief history of its origins and its ongoing influence in medical practice and research
- Part 2
 - Describe racial disparities in kidney disease
 - Explain how the use of race in clinical algorithms such as eGFR exacerbates health inequities
 - Present the new National Kidney Foundation (NKF) and American Society of Nephrology (ASN) joint national guidelines for a race-neutral kidney equation
- Part 3
 - Identify examples of how racism negatively impacts kidney health



Objectives

At the conclusion of this presentation

1. At the conclusion of this presentation, participants will be able to define biological racism and list 3 examples of how biological racism impacts medical decision making and healthcare outcomes.
2. At the conclusion of this presentation, participants will be able to describe how the use of race in kidney function calculation worsens health care disparities.
3. At the conclusion of this presentation, participants will be able to cite the evidence that supports the removal of the race coefficient when calculating eGFR and replacing it with the new race neutral CKD-EPI equation.



PRESS RELEASES

New AMA policies recognize race as a social, not biological, construct



NOV 16, 2020

Part 1

Race has no biological or genetic basis



Biological Racism Definition

Racist policies and ideas that causes and maintains racial inequities, based on the (**UNSUBSTANTIATED**) beliefs that:

- 1) there are biological or genetic differences between races, and**
- 2) these differences make one race superior to another.**

Kendi, I. (2019). How to be an antiracist. Bodley Head.



History of Biological Racism

In the US, scientific racism is rooted in theories of biological inferiority to justify slavery

- Polygenism (*Linneaus* - 1700s)
- Physical Anthropology and Craniometry, Anthropometry (*Morton* - 1800s)
- Eugenics (1900s)
 - American Society of Human Genetics



"The Road Not Taken" by Lerone Bennett Jr. <https://msuweb.montclair.edu/~furrj/essays/bennettroad.html>



Human Genome Project



"The concept of race has no genetic or scientific basis" Craig Venter

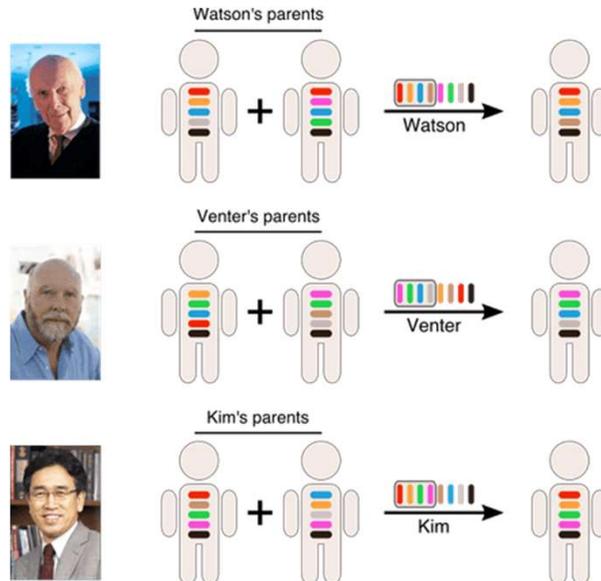
- Humans share 99.9% same genes
 - There is little genetic variation between racially defined groups
 - The most genetic variation is between African populations, NOT between races
 - Genetic changes are a result of random mutations
 - The longer 2 groups are separated the more distinctive tweaks in genes they will acquire
 - Occasionally mutations are advantageous in a new setting and spread quickly through natural selection through the local population
 - Sickle cell trait
 - Gene mutation leading to lighter skin
- "When people speak about race, usually they seem to be referring to skin color and at the same time, to something more than skin color. This is the legacy of people such as Morton, who developed the "science" of race to suit his own prejudices and got the actual science totally wrong. Science today tells us that the visible differences between peoples are accidents of history. They reflect how our ancestors dealt with sun exposure and not much else"—National Geographic's Race Issue*
- To date, there is no complex disease for which the genetic components are completely or even largely understood

Kolbert, E. (2018). There's no scientific basis for race—it's a made up label." National Geographic.



Race cannot adequately or accurately describe global human genetic diversity.

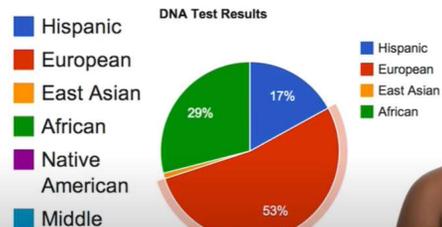
Chou, V. (2017) How Science and Genetics are Reshaping the Race Debate of the 21st Century.



Race and Ancestry are NOT Equivalent



What does my DNA say?

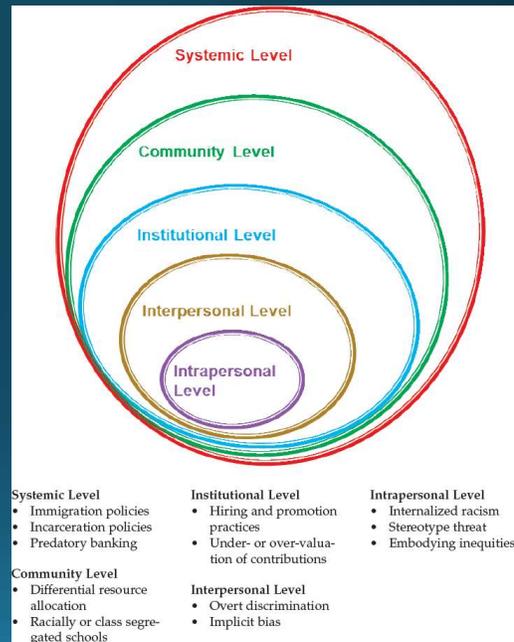


- "It really brought home this idea that we make up race."
- "To the victims of racism, it's small consolation to say that the category has no scientific basis"

<https://www.wcupa.edu/dnaDiscussion/>

Racism not race leads to health care disparities

- *"Race is not a biological category that naturally produces these health disparities because of genetic difference. Race is a social category that has staggering biological consequences because of the impact of social inequality on people's health"*
- - Dorothy Roberts



"The Root Causes of Health Inequality" National Academies Press



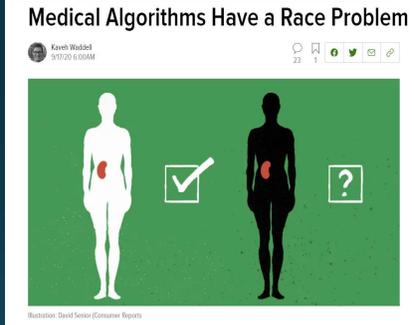
Part 2

Use of race in clinical algorithms can exacerbate health disparities



Hidden in Plain Sight — Reconsidering the Use of Race Correction in Clinical Algorithms

Darshali A. Vyas, M.D., Leo G. Eisenstein, M.D., and David S. Jones, M.D., Ph.D.



Section	Section Variables	Use of Race	Racial Correction
Abstract	Background: Race correction in clinical algorithms is common, but its use is controversial. We examined the use of race correction in clinical algorithms and its impact on outcomes.		
Methods	We performed a systematic review of clinical algorithms that use race correction. We identified 10 algorithms that use race correction. We examined the use of race correction in these algorithms and its impact on outcomes.		
Results	Of the 10 algorithms, 8 used race correction. The use of race correction was associated with improved outcomes in 6 of the 8 algorithms. The use of race correction was associated with worse outcomes in 2 of the 8 algorithms.		
Conclusions	The use of race correction in clinical algorithms is common, but its use is controversial. Our findings suggest that the use of race correction in clinical algorithms may be associated with improved outcomes in some cases, but worse outcomes in others.		
Introduction	Race correction in clinical algorithms is a common practice, but its use is controversial. We examined the use of race correction in clinical algorithms and its impact on outcomes.		
Discussion	The use of race correction in clinical algorithms is a complex issue. Our findings suggest that the use of race correction in clinical algorithms may be associated with improved outcomes in some cases, but worse outcomes in others.		
Conclusion	The use of race correction in clinical algorithms is a complex issue. Our findings suggest that the use of race correction in clinical algorithms may be associated with improved outcomes in some cases, but worse outcomes in others.		

DA Vyas et al. N Engl J Med 2020;383:874-882.



Racial Disparities in Kidney Health

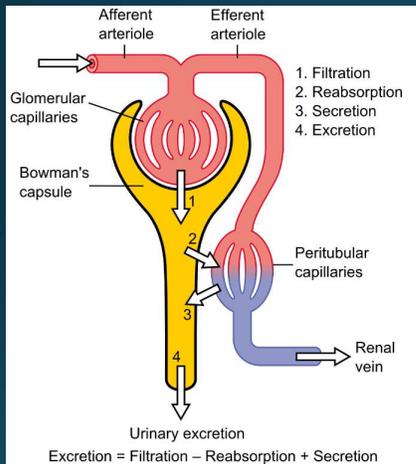
- 37 million people with CKD in US
 - Most unaware until later stages
- Disproportionate % are Black, Hispanic, Native American
- 3X more likely to progress to kidney failure
- Earlier onset and faster decline of GFR
- Black patients make up 13% of US population
 - 30% of patients with ESRD (and at younger age)
 - 35% of patients on dialysis
- Widespread disparities
 - Timing of diagnosis
 - Type and aggressiveness of treatment and prevention measures
 - Later referrals to specialized nephrology care
 - Less access to transplantation

A joint statement from the National Kidney Foundation and the American Society of Nephrology July 2, 2020

Gutiérrez OM, Sang Y, Grams ME, et al. Association of Estimated GFR Calculated Using Race-Free Equations With Kidney Failure and Mortality by Black vs Non-Black Race. JAMA. 2022;327(23):2306–2316.



Kidney function and staging



Prognosis of CKD by GFR and Albuminuria Categories: KDIGO 2012				Persistent albuminuria categories		
				Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30-300 mg/g 3-30 mg/mmol	>300 mg/g >30 mg/mmol
GFR categories (ml/min/1.73m ²) Description and range	G1	Normal or high	≥90			
	G2	Mildly decreased	60-89			
	G3a	Mildly to moderately decreased	45-59			
	G3b	Moderately to severely decreased	30-44			
	G4	Severely decreased	15-29			
	G5	Kidney failure	<15			



How to evaluate GFR: measured vs estimation

- Measured GFR (mGFR) = Gold standard
- Estimated GFR (eGFR) = most used
 - Endogenous filtration marker
 - many different equations
 - Far from perfect
 - GFR determinants and non GFR determinants

Note:

- Need confirmation testing when it really matters



Estimating GFR – Equations

- Cockcroft-Gault
- **MDRD study equation**
- **CKD-EPI_creatinine equation**
- CKD-EPI_cystatin C
- CKD-EPI creatinine-cystatin C combo
- CKD-EPI creatinine_refit without race variable, 2021



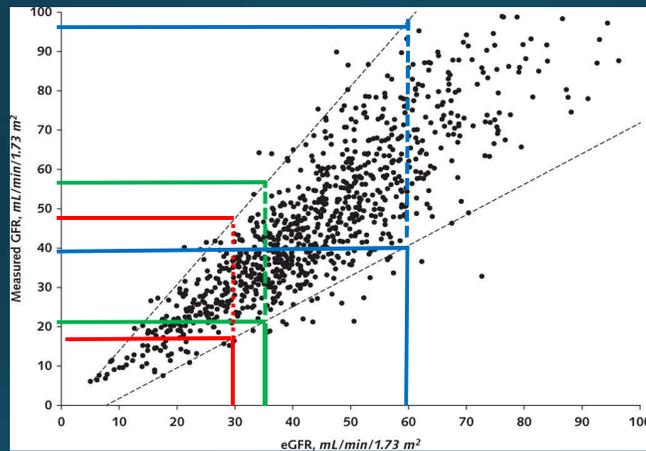
Estimating GFR – Equations

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- CKD-EPI creatinine_refit without race variable, 2021

Race and the False Precision of Glomerular Filtration Rate Estimates

eGFR ≥ 30 =
mGFR range
17-48 ml/min
(CKD IIIa, IIIb,
IV)

Effect of
black race
on eGFR is
5 (vs 31)



Unpublished data are from 954 adult participants in the Chronic Renal Insufficiency Cohort study

Sehgal AR. Race and the false precision of glomerular filtration rate estimates. *Ann Intern Med.* 2020

Annals of Internal Medicine®



Clinical implications- Mr C

	Black	White
Serum Creatinine (mg/dl)	3.5	3.5
Age	45	45
Sex	M	M
MDRD (ml/min/1.73m ²)	23	20
CKD-EPI (ml/min/1.73m ²)	23	20

Table 1. Impact of Race Coefficient on eGFR

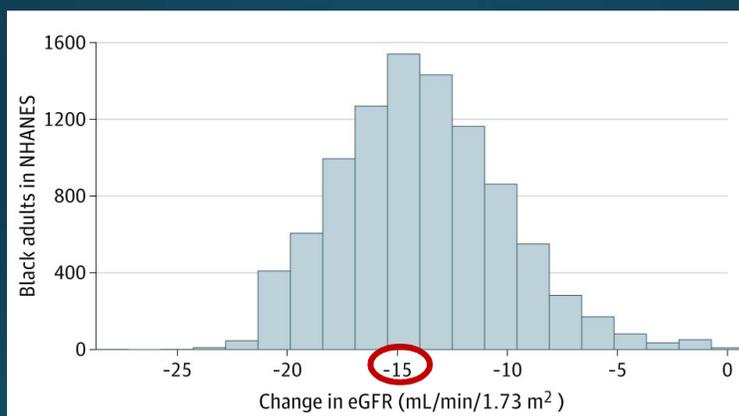


- 35% higher risk of achieving an eGFR less than 20 and a shorter median time to transplant eligibility by 1.9 years

Zelnick LR, Leca N, Young B, Bansal N. Association of the Estimated Glomerular Filtration Rate With vs Without a Coefficient for Race With Time to Eligibility for Kidney Transplant. *JAMA Netw Open*. 2021;4(1):e2034004.



Clinical Implications of Removing Race From Estimates of Kidney Function



"This potential for benefits and harms must be interpreted in light of persistent disparities in care, documented biases of eGFRcr without race, and the historical misuse of race as a biological variable to further racism."



Science: Observation \neq Fact

- Studies show more *intra*-racial genetic variation than *inter*-racial
- Studies show race coefficient in other geographic locations performs worse
- Binary race categories do not represent the growing multiracial population
 - Personal Identity
 - Complex genetic ancestries



The National Conversation

- The National Kidney Foundation (NKF)
- American Society of Nephrology (ASN)

Joint Task Force
September 2020



SPECIAL ARTICLE | www.jasn.org

Reassessing the Inclusion of Race in Diagnosing Kidney Diseases: An Interim Report from the NKF-ASN Task Force

Cynthia Delgado,¹ Mukta Baweja,² Nilka Ross Burrows,³ Daidra C. Crewe,⁴ Nwamaka D. Eneanya,⁵ Crystal A. Gadegebeku,⁶ Lesley A. Inker,⁷ Mallika L. Mendu,⁸ W. Greg Miller,⁹ Marva M. Moxey-Mims,¹⁰ Glenda V. Roberts,¹¹ Wendy L. St. Peter,¹² Curtis Warfield,¹³ and Neil R. Powe¹⁴

Due to the number of contributing authors, the affiliations are listed at the end of this article.

Joint Statement NKF and ASN (2020, July 02); Establishing a Task Force.

www.jasn.org | SPECIAL ARTICLE

Table 4. Inventory of possible approaches to estimating and reporting GFR for general use

Creatinine Used as Biomarker	Noncreatinine Biomarker Used
Estimation and reporting with creatinine and race using existing equations (1) eGFR (MDRD or CKD-EPI) (age, sex, race) with "Black" estimate reported for self-identified African Americans and "non-Black" estimate reported for persons from other communities ^{1,10,12}	Estimation with cystatin C, creatinine, and race using existing equations (12) eGFR _{2cys} (CKD-EPI) (age, sex, race) with "Black" estimate reported for self-identified African Americans and "non-Black" estimate reported for persons from other communities ¹²
Estimation with creatinine and race using existing equations but reporting without specification of race (2) eGFR (CKD-EPI) (age, sex, race) with "Black" estimate reported as "high muscle mass," and "non-Black" estimate reported as "low muscle mass" ¹¹	Estimation with cystatin, creatinine, and race using existing equations but reporting without specification of race (14) eGFR _{2cys} (CKD-EPI) (age, sex, race) with "Black" estimate reported as "high muscle mass," and non-Black estimate reported as "low muscle mass" ¹¹
(3) eGFR (CKD-EPI) (age, sex, race) with "Black" estimate reported as "high value" and "White" reported as "low value" ¹¹	(15) eGFR _{2cys} (CKD-EPI) (age, sex, race) with "Black" estimate reported as "high value," and "White" reported as "low value" ¹¹
(4) eGFR (CKD-EPI) (age, sex, race) with the Black coefficient ignored and eGFR value for White/other is reported for all ¹¹	(16) eGFR _{2cys} (CKD-EPI) (age, sex, race) with the Black coefficient ignored and value for White/Other is reported for all ¹¹
(5) eGFR (CKD-EPI) (age, sex, race), with the Black coefficient used and eGFR value for African Americans is reported for all ¹¹	(17) eGFR _{2cys} (CKD-EPI) (age, sex, race), with the Black coefficient used and value for African Americans is reported for all ¹¹
(6) Blended eGFR (CKD-EPI) (age, sex, race) using a single coefficient weighted for percentage of African Americans in the specific population is reported for all ¹¹	(18) Blended eGFR _{2cys} (CKD-EPI) (age, sex, race) using a single coefficient weighted for percentage of African Americans in the specific population is reported for all ¹¹
Estimation with creatinine that do not include race (7) CG estimated creatinine clearance (age, sex, weight) ^{11,13}	Estimation with cystatin C only (19) eGFR _{cys} (CKD-EPI) (age, sex) ^{11,14}
(8) eGFR (FAS) (age, sex) ¹¹	(20) eGFR _{cys} (FAS) (age, sex) ¹¹
(9) eGFR (EKFC) (age, sex) ¹¹	(21) eGFR _{cys} (CAPA) (age) ¹¹
(10) eGFR (LM) (age, sex) ¹¹	
Equations to be developed to estimate GFR with creatinine that do not include race (11) eGFR _{ref} with without race variable	Equations to be developed to estimate GFR with creatinine and cystatin C that do not include race (22) eGFR _{2cys} with without race variable
(12) eGFR _{ref} with height and weight without race variable	Estimation with creatinine only that does not include race (23) eGFR _{cys} (FAS) (age, sex) ¹¹
	Estimations with new filtration markers in combination with creatinine or cystatin C that do not include race (24) eGFR _{cys-β2m-βtp} (age, sex) ¹¹
	(25) eGFR _{cys-β2m-βtp} (age, sex) ¹¹

(26) Any of the above either in combination or in sequence with measured GFR using exogenous filtration markers or measured creatinine clearance, to be used generally or by clinical indication (e.g., donation, diagnosis, prescription, referral, transplant). Example: One of the above approaches followed by another approach for confirmation.



CKD-EPI 2021 equation –refit without race variable

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A Unifying Approach for GFR Estimation: Recommendations of the NKF-ASN Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Disease

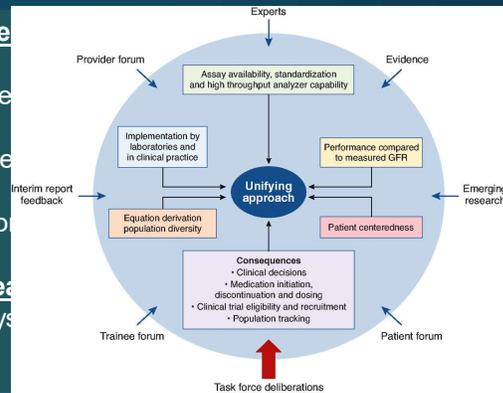
Cynthia Delgado, Mukta Baweja, Deidra C. Crews, Nwamaka D. Eneanya, Crystal A. Gadegeku, Lesley A. Inker, Malika L. Mendu, W. Greg Miller, Marva M. Moxey-Mims, Glenda V. Roberts, Wendy L. St. Peter, Curtis Warfield and Neil R. Powe
JASN December 2021, 32 (12):2994-3015. DOI: <https://doi.org/10.1681/JASN.2021070988>

(1) We recommend immediate implementation of the refit equation without the race variable

- it does not include race in the calculation and re
- included diversity in its development
- is immediately available to all laboratories in the
- acceptable performance characteristics
- potential consequences that do not disproportionately

(2) We recommend national efforts to facilitate increased use of the refit equation

- Combining filtration markers (creatinine and cystatin C)



Estimating GFR – Equations

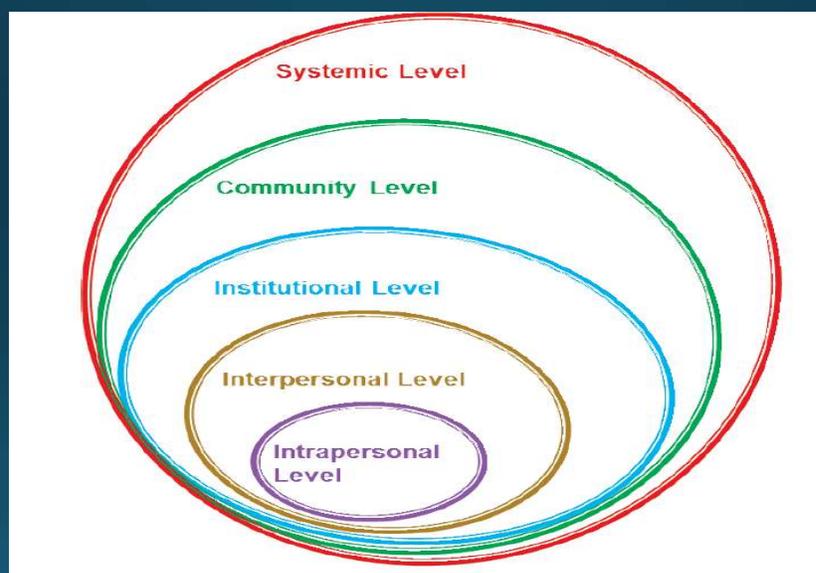
- Cockcroft-Gault
- MDRD study equation
- CKD-EPI_creatinine equation
- CKD-EPI_cystatin C
- CKD-EPI creatinine-cystatin C combo
- **CKD-EPI creatinine_refit without race variable, 2021**



Part 3

Race and Kidney Health

RACE & KIDNEY HEALTH



Policy Forum Perspective

AJKD

Racism and Kidney Health: Turning Equity Into a Reality

Dinushka Mohottige, Clarissa J. Diamantidis, Keith C. Norris, and L. Ebony Boulware

Transplant

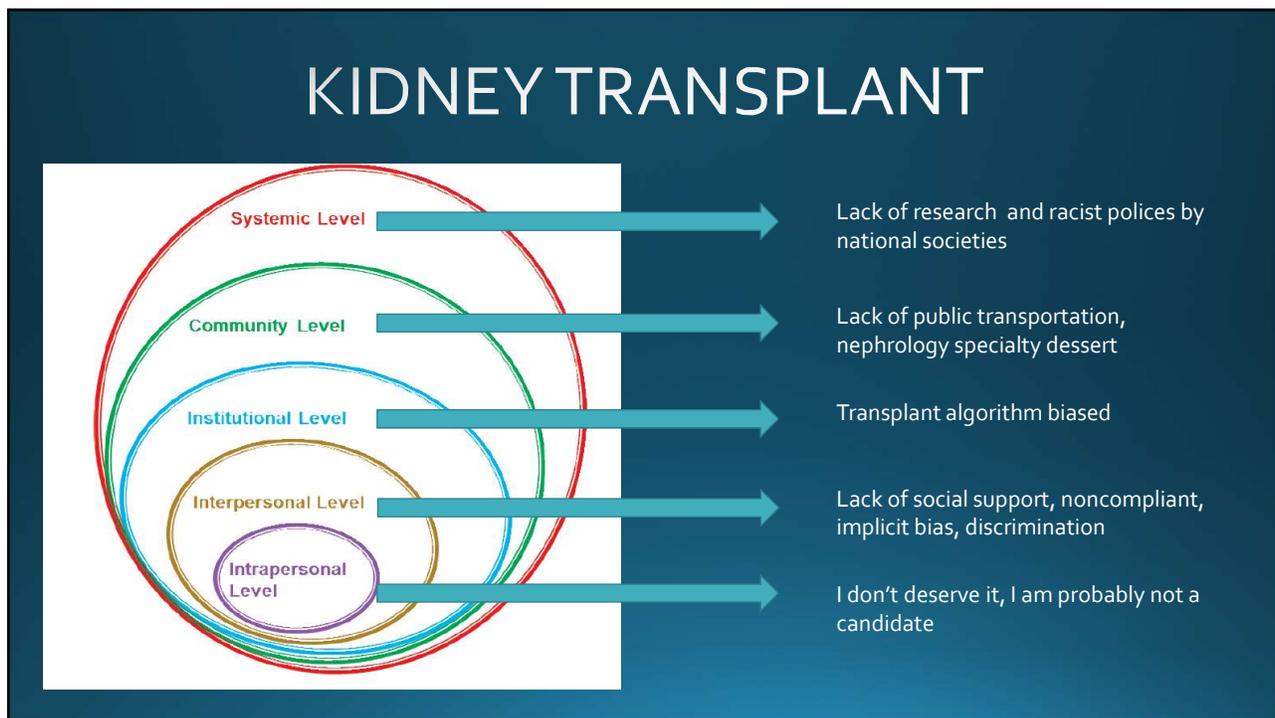
- Lower LDKT incidence and preemptive kidney transplant in Black patients,¹⁴⁰ with growing disparities¹⁴¹
- Less likelihood of Black individuals to be identified as potential transplant candidates, referred for evaluation, or listed for DDKT^{9,49,142,143}

- Higher perceived racism and discrimination cited among Black (vs White) transplant candidates¹⁴⁴ (interpersonal)
- Low provider knowledge about the existence and causes of racial transplant inequity¹⁴⁵ (interpersonal)
- Medical mistrust (due to historical and contemporary mistreatment), experienced discrimination, and perceived racism is associated with lower transplant evaluation initiation¹¹⁷ (interpersonal)
- Black persons in poor predominantly Black neighborhoods are less likely to be waitlisted for transplant than counterparts in wealthy predominantly Black neighborhoods and in poor predominantly White neighborhoods¹⁴⁶ (structural)
- Dialysis units in neighborhoods characterized by higher proportions of Black individuals, lower educational attainment, and more severe poverty are associated with lower transplant rates¹⁴⁷ (structural)
- High influence of unstandardized and contextually influenced factors like “social support” and “adherence” in determining transplant listing decisions¹⁴⁸ (interpersonal)

Abbreviations: CKD, chronic kidney disease; DDKT, deceased-donor kidney transplantation; HTN, hypertension; LDKT, living-donor kidney transplantation; SES, socio-economic status.

Abbreviations: CKD, chronic kidney disease; DDKT, deceased-donor kidney transplantation; HTN, hypertension; LDKT, living-donor kidney transplantation; SES, socio-economic status.

Racism and Kidney Health: Turning Equity Into a Reality, Am J Kidney Dis, 77(6):951-962. Published online February 24, 2021.





ONE STEP FORWARD



Jesse Brown for Black Lives (JB4BL)

Education	Research	Advocacy and Policy	Clinical Care
Structural competency = core competency	Define race and ethnicity as social variables	Amplify voices of URM and marginalized	Anti-racist and equity lens to clinical decisions
Anti-racism and equity embedded curriculum	Promote research on effect of racism on outcomes	Apply equity lens to current policies	Inclusive and equity-focused clinical environment
Bias training	Include representative samples	Expand coverage to include beneficial medications	Unbiased clinical practice alerts and algorithms
Equity-focused race consciousness	Engage community stakeholders	Increase healthcare access	Resist race-based medical algorithms

Racism and Kidney Health: Turning Equity Into a Reality.
Am J Kidney Dis. 77(6):951-962. Published online February 24, 2021.

JB4BL: How are we contributing locally

- Race-neutral clinical algorithms (eGFR, PFTs, ACEi)
- Improve delivery of care (MOUD, vaccinations)
- Curriculum (ARIM, microaggression & bias-reduction training)
- Recruitment (increase diversity in work force)
- Mentoring (support URM interested in health care)



THANK YOU!

- QUESTIONS?
- COMMENTS?
- REFLECTIONS?





Jesse Brown for Black Lives (JB4BL) Acknowledgements

- We would like to thank the JB4BL committee members for their continued dedication to anti-racism work
- Leadership for their support
- Trainees for speaking up and not accepting status quo

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- Reassessing the Inclusion of Race in Diagnosing Kidney Diseases: An Interim Report from the NKF-ASN Task Force. Cynthia Delgado, Mukta Baweja, Nilka Rios Burrows, Deidra C. Crews, Nwamaka D. Eneanya, Crystal A. Gadegbeku, Lesley A. Inker, Mallika L. Mendu, W. Greg Miller, Marva M. Movey-Mims, Glenda V. Roberts, Wendy L. St. Peter, Curtis Warfield, Nell R. Powe. *JASN* Apr 2021, ASN.202103039
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