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Black lives matter … in the cath lab, too! A proposal for the interventional cardiology community to counteract bias and racism

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Abstract

Structural racism in the United States underlies racial disparities in the criminal justice system, in the healthcare system generally, and with regards to the COVID-19 pandemic. In the year 2020, these inequities combined and magnified to such a degree that it left Black Americans and physicians caring for them questioning how much Black lives matter. Academic medical centers and the major cardiology organizations responded to a global call to end racism with bold statements and initiatives. Interventional cardiologists utilize advanced equipment to mechanically treat a wide spectrum of heart problems, yet this technology has not been applied in an equitable manner. Interventional therapies are often underutilized in Blacks, exacerbating healthcare disparities and contributing to the excess cardiovascular morbidity and mortality in these communities. Racial bias, whether intentional, unconscious, systemic, or at the individual level, plays a role in these disparities. Many in the interventional cardiology community aspire to take intentional steps to reduce the impact of bias and racism in our specialty. We discuss several proposals here and provide a "report card" for interventional programs to perform a self-assessment.

KEYWORDS
disparities, equity, injustice, prejudice

1 | INTRODUCTION

The handling of the landmark events of the year 2020 made an unmistakable statement about race relations in the United States. Whether accounting for a disproportionate share of hospitalizations and deaths from COVID-19 infection or suffering the psychological distress from weekly viewings of fatal police encounters fueled by racism, the Black community, already disproportionately burdened by heart disease, has been forced to question how much Black lives matter in modern society.[1] Structural racism that negatively impacts the health of minority and disadvantaged communities and racism in the criminal justice system are not new, but the year 2020 saw these forces combine to impact minority communities in unprecedented ways. Major medical organizations including the major heart organizations and academic medical centers have responded with bold, anti-racism statements and initiatives.[2,3]

Interventional cardiac procedures are often underutilized in patients of color and this can be associated with excess morbidity and mortality in Blacks. Interventional cardiologists often meet their patients in the cardiac catheterization laboratory (CCL), by which time the patient has already overcome barriers to engage the healthcare system and interacted with providers who have made the appropriate referral. Racial differences in income, insurance levels, and in access to high-quality acute cardiac hospitals all play an important role in these disparities[4-6] and are outside of the interventionalist's control.

Yet, racial disparities are apparent in veteran's affairs hospitals[7] where access should be the same for all patients and can even persist after reforms like mandated insurance for all.[8] Thus, we believe that the individual practitioners and the interventional cardiology community can play a role in reducing the impact of bias and racism in our specialty. We propose several intentional steps that interventional cardiologists and their programs can take to promote healthcare equity and provide a "report card" for interventional programs to assess their status and progress. The proposals are based on the literature and the opinions of the authors. Although, there are unique challenges encountered by patients of diverse races, genders, and sexual orientations, this article highlights the disparities faced by Black patients.

2 | PARTICIPATE IN NATIONAL QUALITY IMPROVEMENT PROGRAMS

Compared to White patients in studied cohorts, Black patients with acute coronary syndromes have: longer wait times in the emergency department,[9] longer wait times for angiography,[10] preferential use of bare metal vs drug-eluting stents,[11,12] and lower likelihood to participate in cardiac rehab upon discharge.[13] Racial inequity in access to high-performing hospitals may account for some of these differences,[14] yet individual interventional cardiology programs can take steps to optimize quality. The impact of nominal participation in clinical registries such as the American College of Cardiology National Cardiovascular Data Registry (ACC NCDR) can be enhanced by assigning a member of the CCL team to serve as an "equity auditor" of the program's data. This individual would be assigned to review program-specific data for racial differences in the treatment of ACS and in utilization of other catheterization lab therapies quarterly or twice a year. As the registry already captures race and ethnicity, these data would be readily available. If significant disparities in treatment are found, this person should be empowered to alert leadership and initiate a root-cause-analysis investigation followed by an intense quality improvement program with annual reviews. Additionally, national quality improvement programs like the American Heart Association (AHA) "Get with the Guidelines" programs can provide a framework to identify, track, and address disparities. Participation in the latter has been shown to reduce racial disparities in the care of post-myocardial infarction patients.[15] We recommend that all interventional programs (1) consider participating in the AHA "Get With The Guidelines" or a comparable program, and (2) assign a staff member to closely review ACC NCDR data specifically for racial differences in procedure utilization or outcomes and empower the said person to initiate a programmatic investigation.

3 | ADDRESSING DISPARITIES IN TRANSITIONS FROM ACUTE CARE: MEDICATIONS AND CARDIAC REHAB

The transition from care in the catheterization lab recovery area to home is a time when patients may be particularly vulnerable, as the social determinants of health (SDOH) that impact the prevalence of cardiovascular disease in Blacks could exacerbate differences in post-discharge outcomes. Lower referral rates for cardiac rehab for Black patients have been associated with worse survival.[16] With regards to interventions to enhance patient enrollment in cardiac rehab programs, Grace et al showed that an automatic, electronic order in the discharge order set combined with an individual discussion with the patient was superior to either strategy alone.[17]

Racial disparities in the use of guideline-directed medical therapies in ACS have been documented previously.[18,19] Strategies to increase the proportion of Black patients discharged with guideline-directed medications should help ameliorate these disparities. A "Meds to Beds" program that supplies medications to patients on the day of discharge has shown promise in individual and regional health systems.[20] We recommend that interventional programs (1) collaborate with their inpatient pharmacy teams to tailor similar programs to ensure that all patients leave the hospital with antiplatelet therapy, statins, and other guideline-directed medications in hand, and (2) consider utilizing tools via electronic medical records that link discharge to automatic referrals to cardiac rehab. Physicians and programs should consider the impact of transportation and cost, on patients' ability to adhere to cardiac rehabilitation programs. We encourage providers to individualize advice regarding physical activity and diet for those who are unable to participate in a formal program.

4 | PRIORITIZE PATIENT DIVERSITY IN CATH LAB-BASED CLINICAL RESEARCH TRIALS

If clinical research is to benefit all of humanity, the trials upon which drug/device approval are based must be representative of the whole population. Although Blacks comprise 13% of the US population, they tend to be 5% or less of trial participants. Recent studies show that 91% of patients in a national registry of transcatheter aortic valve repair (TAVR) procedures were White, as were 91% of patients in contemporary coronary stent trials.[21] This current reality of clinical research trials deprives Black patients from the potentially life-saving benefits of participating in trials of cutting-edge therapies, and since important gene- or environment-influenced adverse effects could be missed, treatments based on racially homogeneous trial populations could put minority communities at risk. A lack of cultural competency among principal investigators and research coordinators and lingering mistrust in the Black community regarding research have been proposed as culprits.[22,23] In an exercise in which Black patients discussed their perceptions of research studies, over one-third of the respondents felt that experiments might be done on them without their knowledge.[24] We recommend that investigators review the demographic profile of trial participants periodically and, if severely lacking diversity, halt recruitment to review ways to enhance participation of diverse individuals, like recruiting diverse research coordinators or having existing coordinators undergo cultural sensitivity training.[25] Interventional cardiology research teams could also host educational

focus groups with patients to discuss the benefits of participating in trials and the values of non-maleficence and patient autonomy in the conduct of research.

5 | ENHANCE BLACK COMMUNITY OUTREACH AND ENGAGEMENT FOR INNOVATIVE AS WELL AS APPROVED CATH LAB THERAPIES

In a review of National Inpatient Sample data from 2011 to 2016, the utilization rate of mitra-clip, TAVR, and left atrial appendage closure devices was significantly lower in Blacks compared to White patients.[26] Barriers may include lack of specialist referrals, mistrust of physicians, and underinsurance. We recommend interventional cardiology sections work with their institution's outreach and community engagement officers to develop strategies specifically targeted to reach Black patients with severe heart disease. This may include visiting physician offices and inviting primary care physicians and referring cardiologists to tour facilities. Direct outreach to Black community gathering places like barbershops have proven effective at improving blood pressure control in Black men.[27] Interventional cardiologists can engage the Black community by attending health fairs and visiting Black churches, fraternities, and sororities to educate lay audiences on the efficacy of invasive cardiac therapies. These engagements should be recurring and a part of a comprehensive strategy of continuous community engagement as opposed to a "one off". This would be facilitated by having a paid staff member or a portion of a faculty member's time supported specifically for this purpose.

6 | IMPLICIT BIAS MITIGATION WORKSHOPS FOR CATH LAB PROFESSIONALS

Based on images and stimuli that we experience repeatedly, we may make positive or negative associations about different demographic groups of people. When this occurs outside of our conscious awareness or control, it is known as implicit bias and can influence behavior and lead well-intentioned people to unknowingly discriminate. In a vignette-based study, physicians with implicit association test results showing negative implicit biases toward Black individuals were less likely to treat Black as opposed to White heart attack patients with thrombolytic therapy despite identical clinical scenarios.[28] In a more recent study investigating predictors of early vs late coronary angiography in patients presenting with acute coronary syndromes (ACS), Black race surfaced as an independent risk factor for "late" angiography, defined as more than 72 h after hospital admission.[10] Recurring workshops to rehearse bias mitigation strategies can be undertaken as an entire cardiac catheterization laboratory (CCL) team, with physicians, nurses, and radiologic technicians all participating. We prefer a model in which clinical cases are presented and discussed and workshop participants intentionally list items that could trigger biases (race, skin tone, gender, perceived religion, obesity, etc.) and then verbally "rehearse" research-proven bias mitigation strategies like actively developing empathy for the patient ("perspective taking") or engaging in a second review of the data ("consider the opposite") before making a clinical disposition.[29] These discussions should be moderated by an experienced bias mitigation workshop leader. Bias mitigation workshop training of academic faculty has been associated with an enhanced perception of an inclusive atmosphere by minority medical school applicants[30] and women in academic medicine[31]and with increased hiring of women faculty.[32] While data are lacking that clinical outcomes are improved by bias mitigation training of healthcare teams, it seems reasonable to expect that training a CCL team could

TABLE 1 Fellowship evaluation form: diversity/ability to enhance cultural competency of the program

1.	Community outreach (since beginning medical school, has candidate participated in activities that reach out to and provide service to the broader community? Examples: Volunteering in free clinic, community clean up, tutoring, etc.)
	0 or 1 activity on electronic residency application service (ERAS) = 1 point
	2 distinct activities on ERAS = 2 points
	3 or more distinct activities on ERAS = 3 points
2.	Immersion experience with culture other than your own (since beginning medical school, meaningful efforts to learn about or work with people from cultures other than their own. Examples: Bi-multilingual, service activities overseas, coursework, etc.)
	0 or 1 activity = 1 point
	2 distinct activities = 2 points
	3 or more distinct activities = 3 points
3.	Since beginning medical school, training at hospital serving largely underserved/disadvantaged populations (example: "Safety net" or county hospital; free clinics)
	0 or 1 training program on ERAS = 1 point
	2 distinct training programs on ERAS = 2 points
	3 or more distinct training programs on ERAS = 3 points
4.	Experience working on or investigating problems of disparities/health inequity (examples include research project, employment, scholarly writing)
	0 or 1 project on ERAS = 1 point
	2 distinct projects on ERAS = 2 points
	3 or more distinct projects on ERAS = 3 points
5.	Question: Ask question related to depth of understanding about racial healthcare disparities. Grade on numeric scale based on completeness and depth of knowledge.
	Answer with only surface understanding of the problem = 1 point
	States the problem and 1 underlying cause (SDOH, structural racism, etc.) = 2 points
	States the problem and discusses 2 or more underlying causes = 3 points
	Total points: 0–5 = less competitive; 6–9 = competitive; 10–15 = outstanding

TABLE 2 Anti-bias "report card"

Strategy	Are you doing this? (if "no," stop here and record "0" in point Total. If "yes" continue along row)	Does at least 1 faculty or staff member have responsibility for overseeing this?	Does faculty/staff member have resources (salary support or time release) to support this activity?	Point Total
Cath lab team participates in bias or racism-mitigation workshops at least annually	Yes = 1 No = 0	Yes = 1 No = −0.5	Yes = 1 No = −0.5	
Coordinated "meds to bed" program with pharmacy	Yes = 1 No = 0	Yes = 1 No = −0.5	Yes = 1 No = −0.5	
Active recruitment of diverse patients into research trials	Yes = 1 No = 0	Yes = 1 No = −0.5	Yes = 1 No = −0.5	
Participation in AHA get with the guidelines program); assigned "equity auditor" for ACC NCDR	Yes = 1 No = 0	Yes = 1 No = −0.5	Yes = 1 No = −0.5	
Actively recruiting diverse patients for innovative therapies	Yes = 1 No = 0	Yes = 1 No = −0.5	Yes = 1 No = −0.5	
Attempts to enhance diversity in training program (actively engaged in at least 2 of the 3 strategies described in # 6 in the text)	Yes = 1 No = 0	Yes = 1 No = −0.5	Yes = 1 No = −0.5	

Note: Rating: 0–1 = Time to get started; 2–6 = Average; 7–14 = Above average; 15–18 = Exemplary.

enhance the atmosphere of inclusion perceived by patients and colleagues alike. Since changes in behavior as a result of this activity may revert with time, we highly recommend bias mitigation training of CCL professionals be a recurring activity, perhaps annually.

7 | ENHANCING DIVERSITY IN INTERVENTIONAL CARDIOLOGY

Fewer than 3 % of cardiologists are Black, with numbers likely smaller among interventional specialists.[33] Black physicians are more likely to locate their practices in and serve underserved and disadvantaged communities[34] and are least likely of all physician groups to harbor negative implicit racial biases.[35] Furthermore, Black patients describe their interactions with Black doctors as more "patient centered" and rate the communication as more compassionate.[36] Finally, recent studies have confirmed long held notions that Black patients are more likely to comply with recommendations from Black as compared to White or other race doctors, including the likelihood to agree to invasive blood tests, vaccinations, and open heart surgery.[37,38] These findings suggest that increasing the number of Black interventional cardiologists could be an effective way to eliminate or reduce racial disparities in interventional cardiac care. The American College of Cardiology's Diversity and Inclusion Task Force was created in 2017 to join the efforts of other organizations, like the Association of Black Cardiologists, in addressing the lack of diversity in the profession. Activities of the task force have included focusing on the "deep pipeline" of underrepresented groups in cardiology by exposing high school and college students to the specialty and engaging fellowship program directors in efforts to enhance diversity in training programs. In a recent survey, most cardiology fellowship program directors surveyed agreed that diversity within cardiology needs to increase.[39] In a separate survey, only 6% of fellowship program directors consider diversity or the ability to enhance cultural competency of the program a top priority when creating their rank lists.[40] The Ohio State University evaluates interventional cardiology candidates on five traits, one of which incorporates the candidate's experience with people from cultures different from him/herself, clinical experience treating underserved patient populations, and documented experience with community outreach activities. This "diversity/cultural competency" rating is assigned the same value numerically as research experience, clinical skills, leadership ability, and academic curiosity. This has helped to build on a tradition of inclusive excellence in a program that has trained at least one Black or underrepresented minority interventional cardiologist for 8 years in a row. A version of this form utilized at OSU is reproduced in Table 1 and can be easily tailored to different programs. We implore all interventional cardiology training programs to engage in three activities that can enhance diversity in the specialty: 1) outreach to the deep pipeline of minority college, high school and pre-high school students to expose them to interventional cardiology via hands-on learning sessions in simulation centers, inviting them to shadow and attend educational programs, and visiting high school "career day" sessions; 2) outreach to the "intermediate pipeline" (medical students and internal medicine residents) via presentations to minority student groups like the Student National Medical Association and the Latino Medical Student Association and serving as mentors and advisors for internal medicine residents and cardiology fellows; 3) utilizing tools at the selection stage of fellows,

such as a point-score system that prioritizes cultural competence and experience serving underserved populations (Table 1), or the holistic review of candidates placing an equal emphasis on experiences, cultural attributes, and standardized test scores.[41] Activities such as these will help training programs comply with the Accreditation Council of Graduate Medical Education's recent mandate that programs demonstrate efforts to enhance diversity and inclusion in their training programs.[42]

8 | AN EXERCISE IN SELF-ASSESSMENT: AN ANTI-BIAS "REPORT CARD"

We provide a non-validated self-assessment tool for interventional cardiology programs to evaluate their efforts in mitigating and combating racial bias in their operations (Table 2). This can be easily tailored to fit a specific program and is offered only as an example. A simple point-score system, the tool penalizes programs that are performing an activity but do not provide resources that would make the activity sustainable. This is to recognize that efforts at community engagement, implicit bias mitigation training, enhancing diversity in fellowship programs and among clinical trial participants and recipients of cath lab therapies, require an investment of human and financial resources. When these and similar activities are undertaken in interventional cardiology sections, they are often led by a minority physician with a passion for such issues, but these activities are uncompensated, occur "after hours", and are not properly valued by promotion and tenure committees. This can accelerate burnout and job dissatisfaction among minority physicians suffering from the well-described "minority tax."[43] In our opinion, efforts that are not supported financially are not likely to lead to durable change.

9 | CONCLUSION

Recent events have brought about a global call to end systemic racism in all aspects of American life. Many academic medical centers have made bold statements supporting efforts to mitigate bias and racism in every aspect of their organization. We propose program-level actions that interventional cardiology sections can undertake to extend these efforts to patient care in the CCL. Interventional cardiologists and their teams may have to overcome institutional resistance, and inertia to enact these proposals. If we do not, more Black lives will be at stake.

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REFERENCES

1. Stolberg SG. 'Pandemic within a pandemic': Coronavirus and police brutality roil black communities. New York Times. 2020.
2. https://newsroom.heart.org/news/joint-statement-on-health-equity-social-justice-and-civil-unrest-from-the-association-of-black-cardiologists-the-american-heart-association-and-the-american-college-of-cardiology 2020
3. https://scai.org/scai-statement-recent-national-events#:~:text=We%20denounce%20incidents%20of%20racism,power%20to%20create%20positive%20change
4. Popescu I, Cram P, Vaughan-Sarrazin MS. Differences in admitting hospital characteristics for black and white Medicare beneficiaries with acute myocardial infarction. Circulation. 2011;123(23):2710-2716. https://doi.org/10.1161/CIRCULATIONAHA.110.973628.
5. Bolorunduro O, Smith B, Chumpia M, et al. Racial difference in symptom onset to door time in ST elevation myocardial infarction. J Am Heart Assoc. 2016;5(10):e003804. https://doi.org/10.1161/JAHA.116.003804.
6. Philbin EF, McCullough PA, DiSalvo TG, Dec GW, Jenkins PL, Weaver WD. Socioeconomic status is an important determinant of the use of invasive procedures after acute myocardial infarction in New York state. Circulation. 2000;102(19 Suppl 3):III107-III115. https://doi.org/10.1161/01.cir.102.suppl_3.iii-107.
7. Groeneveld PW, Kruse GB, Chen Z, Asch DA. Variation in cardiac procedure use and racial disparity among veterans affairs hospitals. Am Heart J. 2007;153(2):320-327. https://doi.org/10.1016/j.ahj.2006.10.032.
8. Albert MA, Ayanian JZ, Silbaugh TS, et al. Early results of Massachusetts healthcare reform on racial, ethnic, and socioeconomic disparities in cardiovascular care. Circulation. 2014;129(24):2528-2538. https://doi.org/10.1161/CIRCULATIONAHA.113.005231.
9. Alrwisan A, Eworuke E. Are discrepancies in waiting time for chest pain at emergency departments between African Americans and whites improving over time? J Emergency Med. 2016;50(2):349-355.
10. Rashid M, Fischman DL, Martinez SC, et al. Temporal trends and predictors of time to coronary angiography following non-ST-elevation acute coronary syndrome in the USA. Coron Artery Dis. 2019;30(3):159-170.
11. Shafiq A, Gosch K, Amin AP, Ting HH, Spertus JA, Salisbury AC. Predictors and variability of drug-eluting vs bare-metal stent selection in contemporary percutaneous coronary intervention: insights from the PRISM study. Clin Cardiol. 2017;40(8):521-527. https://doi.org/10.1002/clc.22693.
12. Doshi R, Shah J, Jauhar V, Decter D, Jauhar R, Meraj P. Comparison of drug eluting stents (DESs) and bare metal stents (BMSs) with STEMI: who received BMS in the era of 2nd generation DES? Heart Lung. 2018;47(3):231-236. https://doi.org/10.1016/j.hrtlng.2018.02.004.
13. Ritchey MD, Maresh S, McNeely J, et al. Tracking cardiac rehabilitation participation and completion among medicare beneficiaries to inform the efforts of a national initiative. Circ Cardiovasc Qual Outcomes. 2020;13(1):e005902. https://doi.org/10.1161/CIRCOUTCOMES.119.005902.
14. Nallamothu BK, Lu X, Vaughan-Sarrazin MS, Cram P. Coronary revascularization at specialty cardiac hospitals and peer general hospitals in black Medicare beneficiaries. Circ Cardiovasc Qual Outcomes. 2008;1(2):116-122. https://doi.org/10.1161/CIRCOUTCOMES.108.800086.

15. Cohen MG, Fonarow GC, Peterson ED, et al. Racial and ethnic differences in the treatment of acute myocardial infarction: findings from the get with the guidelines-coronary artery disease program. Circulation. 2010;121(21):2294-2301. https://doi.org/10.1161/CIRCULATIONAHA.109.922286.
16. Li S, Fonarow GC, Mukamal K, et al. Sex and racial disparities in cardiac rehabilitation referral at hospital discharge and gaps in long-term mortality. J Am Heart Assoc. 2018;7(8):e008088. https://doi.org/10.1161/JAHA.117.008088.
17. Grace SL, Russell KL, Reid RD, et al. Stewart DE; cardiac rehabilitation care continuity through automatic referral evaluation (CRCARE) investigators. Effect of cardiac rehabilitation referral strategies on utilization rates: a prospective, controlled study. Arch Intern Med. 2011;171(3):235-241. https://doi.org/10.1001/archinternmed.2010.501.
18. Sonel AF, Good CB, Mulgund J, et al. CRUSADE investigators. Racial variations in treatment and outcomes of black and white patients with high-risk non-ST-elevation acute coronary syndromes: insights from CRUSADE (can rapid risk stratification of unstable angina patients suppress adverse outcomes with early implementation of the ACC/AHA guidelines?). Circulation. 2005;111(10):1225-1232. https://doi.org/10.1161/01.CIR.0000157732.03358.64.
19. Suero-Abreu GA, Karatasakis A, Rashid S, et al. Factors associated with disparities in appropriate statin therapy in an outpatient Inner City population. Healthcare (Basel). 2020;8(4):361. https://doi.org/10.3390/healthcare8040361.
20. Conliffe B, VanOpdorp J, Weant K, VanArsdale V, Wiedmar J, Morgan J. Impact of an advanced pharmacy practice experience student-run "meds 2 beds" and discharge counseling program on quality of care. Hosp Pharm. 2019;54(5):314-322.
21. Golomb M, Redfors B, Crowley A, et al. Prognostic impact of race in patients undergoing PCI: analysis from 10 randomized coronary stent trials. JACC Cardiovasc Interv. 2020;13(13):1586-1595. https://doi.org/10.1016/j.jcin.2020.04.020.
22. Clark LT, Watkins L, Piña IL, et al. Increasing diversity in clinical trials: overcoming critical barriers. Curr Probl Cardiol. 2019 May;44(5):148-172. https://doi.org/10.1016/j.cpcardiol.2018.11.002.
23. Ortega RF, Yancy CW, Mehran R, Batchelor W. Overcoming lack of diversity in cardiovascular clinical trials: a new challenge and strategies for success. Circulation. 2019;140(21):1690-1692. https://doi.org/10.1161/CIRCULATIONAHA.119.041728.
24. Corbie-Smith G, Thomas SB, St George DM. Distrust, race, and research. Arch Intern Med. 2002;162(21):2458-2463.
25. Barrett NJ, Ingraham KL, Vann Hawkins T, Moorman PG. Engaging African Americans in research: the Recruiter's perspective. Ethn Dis. 2017 Dec 7;27(4):453-462. https://doi.org/10.18865/ed.27.4.453.
26. Alkhouli M, Alqahtani F, Holmes DR, Berzingi C. Racial disparities in the utilization and outcomes of structural heart disease interventions in the United States. J Am Heart Assoc. 2019;8(15):e012125. https://doi.org/10.1161/JAHA.119.012125.
27. Victor RG, Blyler CA, Li N, et al. Sustainability of blood pressure reduction in black barbershops. Circulation. 2019;139(1):10-19. https://doi.org/10.1161/CIRCULATIONAHA.118.038165.
28. Green AR, Carney DR, Pallin DJ, et al. Implicit bias among physicians and its prediction of thrombolysis decisions for black and white patients. J Gen Intern Med. 2007;22(9):1231-1238.
29. Capers Q. How clinicians and educators can mitigate implicit bias in patient care and candidate selection in medical education. ATS Scholar. 2020;1(3):211-217. https://doi.org/10.34197/ats-scholar.2020-0024ps.
30. Capers Q 4th, Clinchot D, McDougle L, Greenwald AG. Implicit racial bias in medical school admissions. Acad Med. 2017;92(3):365-369. https://doi.org/10.1097/ACM.0000000000001388.
31. Carnes M, Devine PG, Baier Manwell L, et al. The effect of an intervention to break the gender bias habit for faculty at one institution: a cluster randomized, controlled trial. Acad Med. 2015;90(2):221-230. https://doi.org/10.1097/ACM.0000000000000552.
32. Devine PG, Forscher PS, Cox WTL, Kaatz A, Sheridan J, Carnes M. A gender bias habit-breaking intervention led to increased hiring of female faculty in STEMM departments. J Exp Soc Psychol. 2017;73:211-215. https://doi.org/10.1016/j.jesp.2017.07.002.
33. Mehta LS, Fisher K, Rzeszut AK, et al. Current demographic status of cardiologists in the United States. JAMA Cardiol. 2019;4:1029-1033. https://doi.org/10.1001/jamacardio.2019.3247.
34. Marrast LM, Zallman L, Woolhandler S, Bor DH, McCormick D. Minority physicians' role in the care of underserved patients: diversifying the physician workforce may be key in addressing health disparities. JAMA Intern Med. 2014;174(2):289-291.
35. Sabin J, Nosek BA, Greenwald AG, Rivara FP. Physicians' implicit and explicit attitudes about race by MD race, ethnicity, and gender. J Health Care Poor Underserved. 2009;20(3):896-913.
36. Cooper LA, Roter DL, Johnson RL, Ford DE, Steinwachs DM, Powe NR. Patient-centered communication, ratings of care, and concordance of patient and physician race. Ann Intern Med. 2003;139(11):907-915. https://doi.org/10.7326/0003-4819-139-11-200312020-00009.
37. Alsan M, Garrick O, Graziani G. Does diversity matter for health? Experimental evidence from Oakland. Am Economic Rev. 2019;109(12):4071-4111. https://doi.org/10.1257/aer.20181446.
38. Saha S, Beach MC. Impact of physician race on patient decision-making and ratings of physicians: a randomized experiment using video vignettes. J Gen Intern Med. 2020;35(4):1084-1091. https://doi.org/10.1007/s11606-020-05646-z.
39. Damp JB, Cullen MW, Soukoulis V, et al. Program directors survey on diversity in cardiovascular training programs. J Am Coll Cardiol. 2020;76(10):1215-1222.
40. Crowley AL, Damp J, Sulistio MS, et al. Perceptions on diversity in cardiology: a survey of cardiology fellowship training program directors. J Am Heart Assoc. 2020;9(17):e017196.
41. Luke J, Cornelius L, Lim HW. Dermatology resident selection: shifting toward holistic review? J Am Acad Dermatol. 2020;S0190-9622(20):33057-33057. https://doi.org/10.1016/j.jaad.2020.11.025.
42. Duvernoy CS, Capers Q. The accreditation council for graduate medical education mandates that you attempt to enhance diversity in your cardiology program: great! (how do we do that?). Circ Cardiovasc Qual Outcomes. 2020;13(8):e006912. https://doi.org/10.1161/CIRCOUTCOMES.120.006912.
43. Rodríguez JE, Campbell KM, Pololi LH. Addressing disparities in academic medicine: what of the minority tax?. BMC Medical Education. 2015;15 (1):https://doi.org/10.1186/s12909-015-0290-9.

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