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Increasing Pathways to Medicine and Improving Patient Outcomes: A Multi-Systems Approach

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Increasing Pathways to Medicine and Improving Patient Outcomes: A Multi-Systems Approach

While the medical field in the United States is renowned for research and innovation, with large numbers of world-class healthcare facilities and cutting-edge technologies, inequities in overall health outcomes demonstrate pronounced disparities in accessing care. Despite the availability of high-quality care and medical technologies in some areas, unequal access to care has led the U.S. to lag behind other developed economies, with health measures such as life expectancy and infant mortality rates faring poorly compared to countries with more equitable access to care.¹

While access to high-quality care is largely linked to both cost and geography (including zip code, rurality, and availability of transportation), many health disparities in the U.S. are also racially stratified. This stratification highlights the importance of both diversity and cultural humility amongst medical providers in addressing these inequalities.

In the wake of recent Supreme Court legislation barring post-secondary institutions from adopting certain affirmative action strategies in their student admissions processes, additional steps must be taken by medical schools to recruit and retain medical students of color. In addition, medical schools should provide adequate training to all students to be able to serve increasingly diverse patient populations. Research supports the effectiveness in implicit bias trainings in medical schools in reducing bias against patients, ultimately leading to improved patient care.^{2,3,4} And, while the research suggesting that racial concordance between doctors and patients can improve health outcomes presents mixed conclusions⁵, more definitive data demonstrates that doctors of color are more likely to work in underserved communities, partially addressing the uneven terrain of access to care in these areas.^{6,7}

Increasing provider diversity and cultural humility are critical steps in ensuring advancements are made to equitable care under the current confines of the American healthcare system. To

¹ Hawkes, N. (2019). US falls behind other wealthy nations in life expectancy and infant mortality rates. *BMJ*, 365, l2195. doi: 10.1136/bmj.l2195

² Haider, A. H., et al. (2011). Association of unconscious race and social class bias with vignette-based clinical assessments by medical students. *JAMA*, 306(9), 942-951. doi: 10.1001/jama.2011.1248

³ Devine, P. G., et al. (2012). Long-term reduction in implicit race bias: A prejudice habit-breaking intervention. *Journal of Experimental Social Psychology*, 48(6), 1267-1278. doi: 10.1016/j.jesp.2012.06.003

⁴ Chapman, E. N., et al. (2013). Can curriculum infusion reduce medical students' negative attitudes toward the medically underserved? *Acad Med*, 88(9), 1295-1302. doi: 10.1097/ACM.0b013e31829fe29b

⁵ Shen MJ, Peterson EB, Costas-Muñiz R, et al. The effects of race and racial concordance on patient-physician communication: A systematic review of the literature. *J Racial Ethn Health Disparities*. 2018;5:117-140. doi:10.1007/s40615-017-0350-4

⁶ Snyder JE, Upton RD, Hassett TC, Lee H, Nouri Z, Dill M. Black Representation in the Primary Care Physician Workforce and Its Association With Population Life Expectancy and Mortality Rates in the US. *JAMA Netw Open*. 2023;6(4):e236687. doi:10.1001/jamanetworkopen.2023.6687

⁷ Dyrbye LN, Brushaber DE, West CP. US Medical Student Plans to Practice in Underserved Areas. *JAMA*. Published online October 19, 2023. doi:10.1001/jama.2023.19521

do this, increased pathways to medicine must be created to support both a diversified workforce and improved outcomes for patients. In addition, steps must be taken to improve cultural humility amongst providers. This involves a multi-pronged, multi-systems approach that includes both supports for students of color and anti-bias education at the medical school and professional levels, as well as increased pathways at the K-12 level, to support pathways to medical careers for historically marginalized students.

The University of Houston's Fertitta Family College of Medicine (FFCOM) formed in 2019 with a commitment to the state of Texas and its residents to improve the equity and quality care and training to providers serving historically marginalized populations. FFCOM partnered with Children at Risk to create this letter, elucidating the evidence supporting the need for inclusive practices, especially following the recent Supreme Court decision on affirmative action. New and sustained paths forward are required to forge and continue vital cross-systems dialogues, as well as develop strategies for evidence-based pathways to improved diversity and cultural competencies in healthcare, ultimately improving patient outcomes.

In this letter, we propose the following calls to action to:

1. Strengthen pathways to medical careers for students at the K-12 level
2. Increase diversity amongst medical practitioners
3. Support the need for cultural humility and anti-bias trainings for medical students and professionals

Increasing diversity amongst medical providers starts before students begin applying to medical school: critical strategies are needed at the K-12 level to ensure early exposure to Science, Technology, Engineering, and Mathematics (STEM). Research demonstrates that early exposure to STEM can positively impact children's interest, confidence, and pursuit of STEM careers, including medicine.⁸ Several studies have shown that early exposure to STEM can increase engagement and motivation in STEM subjects^{9,10}, particularly for girls and racially marginalized

⁸ Johnson C, Mozes E. Early Childhood STEM Education: An Exploration of Impact and Effectiveness. *J Early Child Res.* March 2019. DOI: 10.1177/1476718X19832666.

⁹ Maltese AV, Tai RH. Pipeline persistence: Examining the association of educational experiences with earned degrees in STEM among U.S. students. *Science Education.* 2007;91(5):799-822.

¹⁰ Bybee RW, Taylor JA, Gardner A, et al. The BSCS 5E instructional model and 21st century skills: A response to "changing the conversation about STEM education." *S&G.* 2011;2(3):41-52.

groups.^{11,12,13}By introducing engaging, interactive STEM activities early, K-12 schools have a critical role to play in developing confidence and motivation in STEM fields, particularly for underrepresented groups. While early exposure alone cannot completely solve barriers to representation in medical and other STEM fields, it remains a research-backed and critical step to encouraging diversity in STEM careers.

Schools can employ several data-backed strategies to bolster the impact of early exposure to STEM activities. These strategies include:

1. Project-based learning: Implementing project-based learning initiatives can give students the opportunity to apply their knowledge and skills to real-world problems. This approach encourages critical thinking, teamwork, and creative problem-solving.⁸
2. Role models and mentorship: Introducing students to real-world role models and mentors working in various STEM careers can inspire and motivate them. Inviting professionals from STEM fields to share their experiences or arranging field trips to companies or research institutions can be beneficial, and more research supports that presenting diverse STEM role models can increase interest in STEM careers in underrepresented groups.⁹,
3. Extracurricular activities: Offering extracurricular activities such as science clubs, robotics teams, coding clubs, or math competitions can provide additional avenues for students to explore their interests and excel in STEM subjects.¹⁴
4. Partnerships with industry: Building partnerships with local businesses, universities, or research institutions can provide valuable experiences like internships, job shadowing, or guest lectures. These collaborations bridge the gap between classroom learning and real-world applications¹⁵

Of course, these strategies all require sustained commitments and adequate resources, calling for the need for buy-in from a variety of educational stakeholders. While these strategies have been empirically supported, resource inequalities present at the K-12 level, particularly in low-income neighborhoods and communities of color, also dictate the ability of schools to create

¹¹ Cheryan, S., Master, A., & Meltzoff, A. N. (2017). Cultural stereotypes as gatekeepers: Increasing girls' interest in computer science and engineering by diversifying stereotypes. *Frontiers in Psychology*, 8, 1558.

¹² Dasgupta, N., & Stout, J. G. (2014). Girls and women in science, technology, engineering, and mathematics: Stemming the tide and broadening participation in STEM careers. *Policy Insights from the Behavioral and Brain Sciences*, 1(1), 21-29

¹³ Freeman TL, Robeson AK, Tucker RC, et al. Interventions for Underrepresented Minority Students in Science, Technology, Engineering, and Mathematics (STEM) Disciplines: A Systematic Review. *Science Education*. 2014;98(1):145-170

¹⁴ Krishnamurthi, A, Bevan, B, Rinehart, J, Coulon, V. R (2013). what afterschool STEM does best. *Journal of Educational Technology*, 38(2), 123-135. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1016823.pdf>

¹⁵ Blanchard, M.R., Venditti, R.A., McAlexander, S.L., McCance, K.R., & Collier, K.M. (2021). An Interdisciplinary Model to Diversify STEM Participation: College, High School, and Industry Partnerships. In *Enhancing Learning Opportunities Through Student, Scientist, and Teacher Partnerships* (pp. 1-38). doi:10.4018/978-1-7998-4966-7.ch007

such programs, casting light on the ways in which representational disparities are created and sustained across many of the structures that lead to medical careers.

The creation of high-impact STEM exposure programs relies on the recruitment and retention of effective, diverse, and high-quality STEM teachers, and a commitment to the identification and removal of in-school barriers to STEM participation. These barriers include the stratification of course offerings based on ELL status or other standard-based course entry requirements. Equitable access and participation in early-exposure STEM programs requires improvements to the equitable distribution of resources between and within schools, as well as campus-level commitments to teacher recruitment and retention, and necessary student supports.

While K-12 schools have a vital role to play in diversifying interest and confidence in STEM careers, medical schools must also take important steps to ensure that a diverse applicant pool is recruited, accepted, and supported through graduation and residency. While the recent Supreme Court decision on affirmative action has made changes to the strategies universities might employ to achieve this goal, through intentional action, universities and medical schools can still employ various tactics to ensure a diverse and supported student body.

In *Students for Fair Admissions (SFFA) vs. Harvard*, the Supreme Court severely limited universities' use of race as an independent factor to prioritize the acceptance of minority applicants. However, universities and medical schools are still free to consider how an applicant's experience with race has shaped their lives or perspectives.¹⁶ While this is a more challenging metric to measure, universities and medical schools should pay mind to the experiences captured in applicants' personal statements to ensure diverse representation among admitted applicants. Further, while some state laws may pose additional limitations to diversification strategies, the Supreme Court's decision does not bar medical schools from seeking to diversify their applicants and support their admitted students. Some other strategies to support this goal can include:

1. **Outreach and Recruitment:** Actively reaching out to diverse communities and promoting career opportunities in healthcare is crucial. Collaborating with schools, community organizations, and underrepresented groups can help attract individuals from diverse backgrounds.
2. **Mentorship and Networking:** Providing mentorship and networking opportunities for aspiring healthcare professionals from underrepresented groups can help them navigate their careers successfully. Mentors can offer guidance, support, and valuable insights into navigating the medical field.
3. **Collaboration and Partnerships:** Building partnerships with diverse communities, organizations, and universities can help facilitate meaningful collaboration and exchange

¹⁶ U.S. Department of Education, Office for Civil Rights. (2023, August 14). OCR Questions and Answers: Testing, Vision Impairment [PDF document]. Retrieved from <https://www2.ed.gov/about/offices/list/ocr/docs/ocr-questionsandanswers-tvi-20230814.pdf>

of knowledge. This can also aid in creating a more inclusive curriculum that addresses diverse healthcare needs.

4. Diversity-focused Programs: Establishing programs that specifically target underrepresented groups can help create a pipeline for diverse talent. These programs can include mentorship initiatives, scholarships, and internships to provide support and opportunities for individuals to pursue careers in medicine.

Through these strategies, medical schools can take significant steps towards increasing diversity among admitted applicants and supporting equitable representation among healthcare professionals. However, while it remains imperative to increase diversity in medical providers, diversity is not sufficient to address inequities in patient outcomes, including racial inequities.

While some studies suggest that racial concordance between doctors and patients may have certain benefits, such as increased patient satisfaction and improved communication, the evidence isn't definitive.¹⁷ And, while doctors from diverse backgrounds may have a stronger interest and motivation to work in underserved areas due to personal experiences or a desire to address healthcare disparities, varied personal motivations are inadequate remedies to sustained inequities in patient outcomes.

While many undesirable health outcomes in the U.S. are largely attributable to uneven access to care, because of cost, geography, or both, some disparities in patient outcomes seem to highlight the significant role of bias and discrimination in unequal outcomes. For example, maternal and infant mortality rates demonstrate substantially worse outcomes for Black and Indigenous women and babies, even when income and educational attainment are controlled for.¹⁸ This highlights the imperative need for not only a diverse medical workforce, but one that is systematically trained to reduce bias in patient-provider relationships. Enhanced cultural humility among medical providers has the potential to improve the quality of care patients receive.^{19,20}

Cultural humility originally emerged as an educational principle in response to previous approaches based on cultural competence. It attempts to resolve many justified critiques of cultural competency approaches that argue that this approach can reinforce cultural

¹⁷ Meghani SH, Brooks JM, Gipson-Jones T, Waite R, Whitfield-Harris L, Deatrick JA. Patient-provider race-concordance: does it matter in improving minority patients' health outcomes? *Pain Med*. 2009;10(4):701-711. doi:10.1080/13557850802227031

¹⁸ Kellerman, A.L., Dagan, K., Heintzman, J., Rosenbaum, S., DeLeire, T., Angier, H., DeVoe, J.E. (2023). *Racial Disparities in Maternal and Infant Health: Current Status and Efforts to Address Them*. Kaiser Family Foundation. Retrieved from <https://www.kff.org/racial-equity-and-health-policy/issue-brief/racial-disparities-in-maternal-and-infant-health-current-status-and-efforts-to-address-them/>

¹⁹ Saha S, Beach MC, Cooper LA. Patient Centeredness, Cultural Competence and Healthcare Quality. *J Natl Med Assoc*. 2008;100(11):1275-1285. ISSN 0027-9684. doi:10.1016/S0027-9684(15)31505-4

²⁰ Shaya FT, Gbarayor CM. The case for cultural competence in health professions education. *Am J Pharm Educ*. 2006;70(6):124. doi:10.5688/aj7006124

stereotypes that treat culture as fixed and cultural proficiencies as an endpoint to learning.²¹ Cultural humility, by contrast, emphasizes an individualized approach to patient care that centers curiosity, continued self-reflection, and on-going learning. While both approaches have limitations and can mutually inform one another, we use cultural humility throughout this paper to emphasize the need for on-going self-reflection and learning amongst medical providers.

Cultural humility trainings can and should be a mandatory standard in medical training and continued education. With the US population growing increasingly diverse, and the diversity of medical professionals lagging behind,²² it is more vital than ever that doctors are equipped to serve all patients absent of bias. While the variability in quality and content of cultural humility trainings shape their demonstrable connection to improving patient care,²³ they remain a vital step in their potential to reduce racial health disparities²⁴ and increase empathy and communication in patient-provider interactions.²⁵

While it is imperative that medical students are provided with high-quality cultural humility trainings, it is equally important that these trainings are a part of continued education to stay attuned to evolving cultural landscapes and provide equitable care to all patients. Relatedly, providing high-quality cultural humility trainings will be require increased diversity among medical school faculty, ensuring that qualified staff are available to provide such training modules.

While the landscape of unequal medical outcomes in the US requires broad-scale reforms to remedy, a multiple systems approach to increasing pathways to medicine for a diverse and culturally-competent medical workforce is a necessary and vital process. Primary, secondary, post-secondary, and medical schools should all be considered instrumental institutions in the continuing effort towards creating more equitable care for all.

²¹ Daniel Solchanyk, Odera Ekeh, Lise Saffran, Inger E. Burnett-Zeigler & Ashti Doobay-Persaud (2021) Integrating Cultural Humility into the Medical Education Curriculum: Strategies for Educators, Teaching and Learning in *Medicine*, 33:5, 554-560, DOI: 10.1080/10401334.2021.1877711

²² Diversity in Medicine: Facts and Figures 2019. Figure 18: Percentage of All Active Physicians by Race/Ethnicity (2018). Available from: <https://www.aamc.org/data-reports/workforce/data/figure-18-percentage-all-active-physicians-race/ethnicity-2018#:~:text=Diversity%20in%20Medicine%3A%20Facts%20and%20Figures%202019,-Diversity%20in%20Medicine&text=Figure%2018%20shows%20the%20percentage,as%20Black%20or%20African%20American.>

²³ Beach MC, Price EG, Gary TL, et al. Cultural competence: a systematic review of health care provider educational interventions. *Med Care*. 2005;43(4):356-373. doi:10.1097/01.mlr.0000156861.58905.96

²⁴ McGinniss, M.A., Tahmassi, A.G. & Ramos, E. Towards Cultural Competence in the Genomic Age: a Review of Current Health Care Provider Educational Trainings and Interventions. *Curr Genet Med Rep* 6, 187–198 (2018). <https://doi.org/10.1007/s40142-018-0150-0>

²⁵ Haribhai-Thompson J, McBride-Henry K, Hales C, et al. Understanding of empathetic communication in acute hospital settings: a scoping review. *BMJ Open* 2022;12:e063375. doi: 10.1136/bmjopen-2022-063375

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