

# Outcomes From a Novel Graduate Medical Education Leadership Program in Advancing Diversity, Equity, and Inclusion

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## ABSTRACT

**Background** Academic medicine needs more diverse leadership from racial/ethnic minorities, women, people with disabilities, and LGBTQIA+ physicians. Longitudinal structural support programs that bring together underrepresented in medicine (UiM) and non-UiM trainees are one approach to build leadership and scholarship capacity in diversity, equity, and inclusion (DEI).

**Objective** To describe the creation, satisfaction with, and feasibility of a Leadership Education in Advancing Diversity (LEAD) Program and evaluate scholars' changes in self-efficacy, intended and actual behavior change, and outputs in leadership and DEI scholarship.

**Methods** In 2017, we created the LEAD Program, a 10-month longitudinal, single institution program that provides residents and fellows ("scholars") across graduate medical education (GME) with leadership training and mentorship in creating DEI-focused scholarship. In the first 3 cohorts (2017–2020), we assessed scholars' self-efficacy, actual and planned behavior change, and program satisfaction using IRB-approved, de-identified retrospective pre-/post-surveys. We measured scholarship as the number of workshops presented and publications developed by the LEAD scholars. We used descriptive statistics and paired 2-tailed *t* tests to analyze the data.

**Results** Seventy-five trainees completed LEAD; 99% (74 of 75) completed the retrospective pre-/post-surveys. There was statistically significant improvement in scholars' self-efficacy for all learning objectives. All trainees thought LEAD should continue. LEAD scholars have created workshops and presented at local, regional, and national conferences, as well published their findings. Scholars identified the greatest benefits as mentorship, developing friendships with UiM and ally peers outside of their subspecialty, and confidence in public speaking.

**Conclusions** LEAD is an innovative, feasible GME-wide model to improve resident and fellow self-efficacy and behaviors in DEI scholarship and leadership.

## Introduction

While our patient population is rapidly diversifying, there continues to be a lack of diversity in academic medicine, especially in leadership positions.<sup>1</sup> This pervasive scarcity of diverse representation across racial and ethnic minorities, women, LGBTQIA+, and physicians with disabilities is present at all academic levels and across leadership positions.<sup>1–4</sup> There also continues to be a small number of underrepresented in medicine (UiM) individuals, defined as "those racial and ethnic populations that

are underrepresented in the medical profession relative to their numbers in the general population,"<sup>5</sup> entering medical school. Despite numerous attempts to increase the recruitment and retention of physicians from diverse backgrounds, including the implementation of the Liaison Committee on Medical Education standards on diversity in 2009 and the recent Accreditation Council for Graduate Medical Education diversity requirement in 2019, the numbers of UiM faculty have remained alarmingly low across academic health centers in the United States.<sup>5,6</sup> This is particularly concerning because physician diversity is known for enhancing educational experiences for trainees in academic medicine, as well as improving patient care outcomes and increasing the likelihood of serving the medically underserved.<sup>7–9</sup> Furthermore, the extraordinary impact of a global pandemic, social and political unrest, racial injustice, and the

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*Editor's Note: The online version of this article contains Leadership Education in Advancing Diversity (LEAD) educational session topics, a survey of the LEAD Program, LEAD small group workshop titles, and LEAD Program sample budget.*

devastating consequences of environmental climate change have expedited the need to prepare a more diverse physician workforce.<sup>10–14</sup>

Literature shows a myriad of barriers for UiM residents and fellows that contribute to challenges in retaining a diverse academic medicine workforce. It is important to recognize that UiM trainees in academic medicine experience heightened levels of implicit bias, microaggressions, racial discrimination, and the minority tax.<sup>15–19</sup> Lack of institutionalized systems to promote diversity and inclusion education in training programs has an adverse impact on recruitment and retention of UiM trainees in academic medicine.<sup>17,18,20,21</sup> Furthermore, imposter syndrome affects all trainees,<sup>22</sup> but it has been shown to have a deleterious impact on UiM trainees and marginalized groups, creating challenges with balancing personal and professional identities.<sup>17,22</sup> The sustained absence of diverse representation undermines medical education, compromises the learning climate, and disproportionately limits the ability of UiM trainees to find effective mentorship, which is critical for successful advancement in academic medicine.<sup>21,23</sup>

Few published programs in graduate medical education (GME) provide a deliberate approach to support UiM trainees and bring together non-UiM trainees (allies) in building their leadership and scholarship capacity for diversity, equity, and inclusion (DEI) work in academic medicine. Most existing GME leadership programs focus on skill and knowledge building aimed at interpersonal dynamics, communication skills, and team management.<sup>24</sup> However, there are few educational interventions that focus on increasing leadership diversity for underrepresented minorities and women.<sup>25</sup> The New Century Scholars (NCS) Resident Mentoring Program developed by the Academic Pediatric Association provides longitudinal mentoring for UiM pediatric residents in their area of research interest from diverse faculty across various medical institutions.<sup>26</sup> Building the Next Generation of Academic Physicians (BNGAP) also has initiatives centered on supporting diverse pre-faculty development, including UiM college students through residents and fellows, to encourage careers in academic medicine by providing scholarly training in publications, research, and support faculty advancement to leadership roles.<sup>27,28</sup> These outstanding programs demonstrate the need for leadership development of UiM trainees, but are limited in their accessibility and reach as they are highly selective and offered only at the national level. DEI-centered leadership programs at the local institutional level could build leadership capacity as well as allyship, potentially addressing institutional structural racism and inequities in academic medicine.

### Objectives

Design and study the impact of a novel leadership curriculum that promotes scholarship within diversity, equity, and inclusion (DEI).

### Findings

Residents and fellows who have participated in a novel leadership curriculum demonstrated self-efficacy and scholarship in DEI.

### Limitations

This program took place over 3 years at a single institution.

### Bottom Line

Building leadership and scholarship capacity for improving DEI efforts can take place during medical training with the goal to develop inclusive leaders who will support development and retention of diverse faculty in academic medicine and advance health equity.

We believe that creating an environment that enhances intrinsic motivation to learn and address critical issues related to DEI will lead trainees who are both UiM and non-UiM allies to have a continued desire to advocate for equity, promote UiM physicians in leadership roles, and enhance the caliber of academic medicine scholarship with a deeper understanding of DEI practices. We hypothesized that a 10-month longitudinal structural support program for both UiM and non-UiM residents and fellows designed to build leadership and scholarship capacity in DEI would address the structural barriers that impact UiM trainees. This program is based on the conceptual framework of self-determination theory, which posits that promoting learner competence, relatedness, and autonomy leads to intrinsic motivation.<sup>29</sup> The objective of this study was to describe the creation, satisfaction with, and feasibility of the Leadership Education in Advancing Diversity (LEAD) Program and evaluate scholars' changes in self-efficacy, actual and planned behavior change, and outputs of their leadership and DEI scholarship.

## Methods

### Setting

This mixed methods educational intervention study was conducted from August 2017 to June 2020 at a single institution, Stanford University School of Medicine.

### Participants

**Residents and Fellows (“Scholars”):** During the inaugural program year (2017–2018), all pediatric residents and fellows were invited to apply for LEAD. The second year (2018–2019), residents and fellows were invited to apply from 7 clinical departments, including pediatrics, internal medicine, emergency medicine, psychiatry, anesthesiology, surgery, and

obstetrics and gynecology. The third year (2019–2020), the program was opened to all departments in the School of Medicine. Residents and fellows who identified as diverse in terms of race/ethnicity, gender, sexual orientation, disability, and allies were invited to apply to LEAD. We were intentional in promoting this program to all UiM identified trainees through a GME-wide diversity listserv. Allies were also included because we believe that improving the culture of DEI in academic medicine is not the sole responsibility of UiM groups alone (ie, minority tax),<sup>18</sup> but requires the sustained engagement of all physicians.

Interested applicants completed an application in Qualtrics (Qualtrics, Provo, UT) with 3 essay questions: (1) Why are you interested in participating in the LEAD program? (2) What specific goals or skill sets would you like to gain from the LEAD program? and (3) What skill sets or perspectives do you bring to the LEAD program? In addition, applicants submitted a CV and approval from their residency or fellowship program director confirming they were in good standing. Applications were reviewed by the LEAD Program steering committee, comprised of educational program leaders in their respective clinical departments. Given that this was a new educational program and all applicants had compelling reasons to participate, all applicants who applied were accepted.

**Faculty and Educational Administrators (“Mentors”):** The LEAD mentors were Stanford School of Medicine faculty and GME administrators (ie, residency and/or fellowship program coordinators, educational managers for their departments) with varying levels of mentorship experience. We sought to have mentors from diverse backgrounds; however, mentors did not have to identify as UiM. All mentors completed a similar application process as the scholars, including essay questions specifically asking about mentorship experience and interests in DEI scholarship.

### Intervention Curriculum Development

LEAD is a 10-month longitudinal program that provides residents and fellows with knowledge, leadership training, and mentorship in creating scholarly works around DEI topics.

Academic medicine faculty with expertise in DEI research and curriculum development conceptualized this program. We followed Kern’s 6 steps of curriculum development to create the LEAD curriculum. We used recent institutional climate surveys and program leadership feedback as our needs assessment, which enabled us to identify and prioritize a DEI-themed curriculum for trainees and

residency program leadership. We completed a literature review in PubMed, MedEdPORTAL, Scopus, and PsycINFO to inform the curricular topics.

This program is based on the conceptual framework of self-determination theory (SDT), which states that feelings of competence, relatedness, and autonomy lead to internal motivation to learn.<sup>29</sup> Monthly 2-hour evening sessions are the backbone of this program. The first hour is devoted to interactive, discussion-based sessions on DEI and leadership topics given by content experts recruited from the medical school and Stanford University (“Competence” in SDT; see online supplementary data). The second hour is spent working in mentored small groups, reflecting on the first hour discussion (“Relatedness” in SDT) and then developing workshop presentations, considered scholarship for this program, on DEI topics chosen by the scholars (“Autonomy” in SDT). The longitudinal small groups consist of 5 to 7 scholars and 4 to 5 educational mentors to maximize cross-collaboration across different departments and roles. The LEAD Program culminates in an annual Diversity and Inclusion Forum across the School of Medicine, showcasing the workshops created by the scholars.

### Survey

All scholars were invited to complete a survey after completion of the LEAD Program (provided as online supplementary data), assessing residents’ and fellows’ self-reported self-efficacy, actual and planned behavior change, overall satisfaction with the LEAD Program, and demographics. For the self-efficacy questions, we used a retrospective pre-/post-survey design, which allows scholars to reflect on their change in self-efficacy after an educational intervention. Described by Skeff et al, it is considered a stronger way to understand self-efficacy because scholars better understand their changes in self-efficacy once they have gone through the educational program.<sup>30</sup> The actual and planned behavior change and program satisfaction questions were open-ended. Scholarly output in the form of workshop presentations and manuscripts was assessed by self-report and then verified from scholars and mentors during and after completion of the LEAD program.

Participation in the study was completely voluntary with no financial compensation provided. All participants gave informed consent to participate. The surveys were de-identified.

### Data Analysis

Analysis of surveys included descriptive statistics, 2-tailed paired *t* tests and qualitative analysis. Survey comments were analyzed from 3 open-ended survey

questions investigating scholars' self-efficacy, behavior changes scholars had already enacted based on what they learned in LEAD, and scholars' intended behavior change based on participation in LEAD. Two reviewers (C.P., R.B.) hand-coded these answers using conventional content analysis separately, and then met and compared codes line by line, reconciling any differences with a third reviewer (L.Y.).<sup>31</sup> To measure the impact on scholars' leadership and scholarship capacity, we measured the number of workshops presented at local, regional, and national meetings, publications, and other scholarly works. This measurement of impact is ongoing, self-reported by scholars through annual follow-up emails, and then verified by searching PubMed, MedEdPORTAL, and Scopus databases with no current end date as the LEAD Program is still actively ongoing.

The Institutional Review Board at Stanford University approved this study.

## Results

### Participants (Scholars)

In the first program year (2017–2018), 13 pediatric trainees applied, 13 were accepted, and 13 completed the LEAD Program from the Department of Pediatrics. In the second program year (2018–2019), 28 scholars applied, 28 were accepted, and 25 completed the LEAD Program from 7 clinical departments. In the third program year (2019–2020), 49 scholars applied, 49 were accepted, and 37 completed the LEAD Program from 14 clinical departments. See TABLE 1 for participant characteristics. Overall, 99% (74 of 75) of LEAD scholars completed the retrospective pre-/post-survey.

### Quantitative Outcomes

**Self-Efficacy:** In all years, there was statistically significant improvement in scholars' self-efficacy for all LEAD sessions' learning objectives (TABLE 2).

**Scholarly Output:** As of August 2021, scholars have created 15 workshops on various DEI topics (see online supplementary data), representing their small groups. All 3 cohorts have presented at the annual Stanford Medicine Diversity & Inclusion Forum. The first cohort has presented their workshops at 6 local, 3 regional, and 6 national conferences. The second cohort has presented their workshops at 7 local, 1 regional, and 8 national conferences. The third cohort has presented their workshops at 8 local conferences. Of note, all 8 groups in the first 2 cohorts have presented their workshops at a national conference (FIGURE). Three groups have published in MedEdPORTAL<sup>32–34</sup> and one in a national blog.<sup>35</sup>

**Program Satisfaction:** All scholars (74 of 74, 100%) felt the LEAD Program should continue and expand to all GME programs at our institution. While the workshop development of the curriculum was key for building DEI-related scholarship and community in small groups, it should be noted that some scholars felt there was an overemphasis on the workshop development process itself.

Importantly, many scholars noted that they were empowered by the LEAD program:

"I always felt I had something to say, but part of me thought my voice shouldn't be so loud. The mentors in this program helped elevate my voice and told me my ideas mattered as much as everyone else's. They helped me have a sense of belonging among a world of accomplished doctors and scholars I once felt distant from. Now, I can see myself tapping into my potential for leadership, and it's exhilarating."

**Sustainability:** The LEAD Program has sustained and accepted 67 scholars and 30 mentors for its fourth year (2020–2021) and 69 scholars and 32 mentors for its fifth year (2021–2022) across all GME programs and departments at our institution. The LEAD program operates on a limited budget. In its fourth year, in order to address the minority tax,<sup>19,36</sup> we petitioned to protect the time of the 2 co-directors. See online supplementary data for a sample LEAD Program budget.

**Free Responses:** Two themes emerged from the open responses. One theme was that scholars identified that the LEAD Program led them to make specific DEI behavior changes and set goals for additional behavior changes. LEAD scholars reported they were more willing to learn and teach peers, colleagues, and patients how to mitigate bias and to promote the "voices" of their colleagues from diverse backgrounds in academic medicine (TABLE 3). Scholars identified providing effective allyship, sponsorship, and increased intentionality in addressing their own and others' implicit biases as important ways to implement what they had learned. A second theme was that scholars noted that they developed meaningful mentoring relationships during their involvement with the LEAD Program, both with their faculty mentors and with peers in their small groups. This was most evident in the scholars' experiences collaborating to create and present their group's workshop. Scholars identified the greatest benefits of the LEAD Program as mentorship, developing friendships with UIM and ally peers outside of their subspecialty, and confidence in public speaking.



**TABLE 1**  
Demographics of LEAD Scholars (2017–2020)

Demographics	No. (%), N = 74
Training level	
Resident	50 (68)
Fellow	24 (32)
Gender	
Female	48 (65)
Male	25 (34)
Transgender male	0 (0)
Transgender female	0 (0)
Gender non-conforming/non-binary	0 (0)
Prefer to self-describe	1 (1)
Prefer not to answer	0 (0)
Sexual orientation	
Bisexual	3 (4)
Gay	6 (8)
Heterosexual	63 (85)
Lesbian	0 (0)
Pansexual	1 (1)
Self-describe (queer)	1 (1)
Prefer not to answer	0 (0)
Racial/ethnicity (some learners identified multiple races/ethnicities)	
American Indian/Alaskan Native	1 (1)
Asian/Asian American	23 (31)
Black/African American	16 (22)
Hispanic, Latino, or Spanish origin	15 (20)
Native Hawaiian/Pacific Islander	1 (1)
Non-Hispanic White	16 (22)
Self-describe (Central Asian–1, Middle Eastern–2, Armenian–1)	4 (5)
Religious/spiritual preference (some learners identified multiple religions)	
Christianity	42 (57)
Islam	3 (4)
Judaism	3 (4)
Hinduism	6 (8)
Atheist	8 (11)
Agnostic	9 (12)
Other (spiritual)	4 (5)
Prefer not to answer	1 (1)
First generation college graduate	
Yes	14 (19)
No	60 (81)
Prefer not to answer	0 (0)
Medical school training	
US medical school	67 (91)
International medical graduate	7 (9)

**TABLE 1**  
Continued.

Demographics	No. (%), N = 74
Born in United States	
Yes	47 (64)
No	26 (35)
Prefer not to answer	1 (1)
Department/subspecialty (some learners in multiples departments)	
Anesthesiology, perioperative, pain medicine	6 (8)
Cancer institute	3 (4)
Cardiothoracic surgery	0 (0)
Dermatology	2 (3)
Emergency medicine	2 (3)
Internal medicine	4 (5)
Neurology	2 (3)
Neurological surgery	1 (1)
Obstetrics and gynecology	2 (3)
Ophthalmology	1 (1)
Orthopedic surgery	0 (0)
Otolaryngology	1 (1)
Pathology	0 (0)
Pediatrics	42 (57)
Psychiatry	5 (7)
Radiation oncology	1 (1)
Radiology	2 (3)
Surgery	2 (3)
Urology	0 (0)
If not list above, please write in here	4 (5)
Prefer not to answer	0 (0)

Abbreviation: LEAD, Leadership Education in Advancing Diversity.

## Discussion

This is the first published institutional GME-wide longitudinal structural support program for both UiM and non-UiM residents and fellows designed to build knowledge, leadership, and DEI-centered scholarship capacity. The LEAD program also provides mentorship to address the structural barriers that impact UiM trainees and empowers all trainees to lead DEI efforts. We found that scholars had an overall increase in their self-efficacy in DEI topics covered within the curriculum and recognized their own agency to implement changes in their training programs through the workshops they developed during the LEAD Program. All scholars were satisfied with the LEAD Program and agreed that this program should expand to all GME programs. Mentorship, networking, developing friendships with peers outside of their subspecialty, and confidence in public

TABLE 2

Scholars' Retrospective Pre- vs Post-Self-Efficacy Ratings on the LEAD Session Learning Objectives

2017–2018 LEAD Session Learning Objectives	Mean Pre	Mean Post	P Value
Discuss why diversity and inclusion matters in medicine	2.58	4.17	<.001
Describe the 5 practices of exemplary leadership (according to Kouzes and Posner)	1.50	3.00	<.001
Discuss implicit bias and impact of microaggression in the workplace	2.08	4.08	<.001
Define emotional intelligence	2.17	3.67	<.001
Define growth vs fixed mindset	2.00	4.00	<.001
Discuss how privilege operates in the workplace (ie, with colleagues and patients/families)	2.25	3.83	<.001
Describe how to incorporate social justice into your medical practice with patients	2.08	3.33	<.001
List strategies for building your professional network	2.25	3.42	<.001
List strategies for how you can promote underrepresented trainees in leadership in medicine	2.17	3.75	<.001
Describe how to create an interactive workshop	1.67	3.58	<.001
2018–2019 LEAD Session Learning Objectives	Mean Pre	Mean Post	P Value
Discuss why diversity and inclusion matters in medicine	3.00	4.05	<.001
Develop and present an interactive workshop	1.70	3.60	<.001
Discuss implicit bias and the impact of microaggressions in the workplace	2.85	4.05	<.001
Discuss how privilege and allyship operates in the workplace (ie, with colleagues and patients/families)	2.80	3.75	<.001
Define the principles of compassionate leadership	2.30	3.55	<.001
Define emotional intelligence	2.35	3.95	<.001
Describe the practice of leading with mindfulness	1.20	2.40	<.001
Describe how to incorporate social justice into your practice	2.55	3.50	<.001
List strategies for how you can promote underrepresented individuals in leadership in medicine	2.75	3.70	<.001
2019–2020 LEAD Session Learning Objectives	Mean Pre	Mean Post	P Value
Discuss why diversity and inclusion matters in medicine	2.96	4.04	<.001
Develop and present an interactive workshop	2.07	3.52	<.001
Discuss implicit bias and the impact of microaggressions in the workplace	2.56	4.04	<.001
Discuss how groups form and group dynamics	2.26	3.44	<.001
Describe the 5 practices of exemplary leadership (according to Kouzes and Posner)	1.56	3.00	<.001
Define imposter syndrome	2.81	4.22	<.001
Discuss the process for advancing a culture of “inclusive diversity” in leadership	2.26	3.74	<.001
Discuss the impact of structural racism in medicine	2.44	3.89	<.001
List strategies for how to promote culturally sensitive mentoring conversations	2.22	3.74	<.001

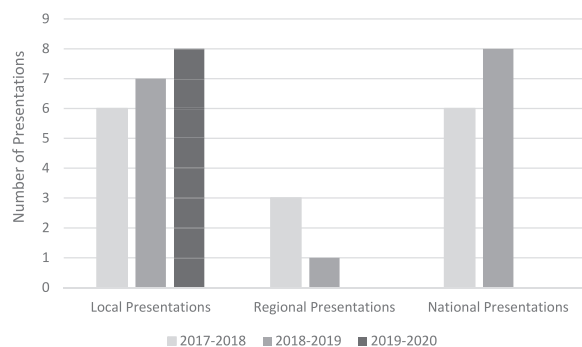
Note: Anchors are 1 = not at all confident, would need a mentor to tell me exactly what to do; 2 = somewhat confident, would want to have a mentor working with me; 3 = fairly confident, might want a mentor to provide targeted advice or serve as a consultant; 4 = very confident, would not need a mentor at all; and 5 = fully confident, could teach this to others.

Abbreviation: LEAD, Leadership Education in Advancing Diversity.

speaking were highlighted as strengths of the LEAD Program. The LEAD Program has grown exponentially each year, initially with a cohort of 13 scholars in 2017–2018 to 69 scholars in the 2021–2022 cohort across all GME programs. In addition to building self-efficacy and mentoring relationships, the LEAD Program has developed a community of trained leaders in DEI scholarship.

The LEAD Program's pioneering efforts build on other visionary programs such as the NCS Resident

Mentoring Program and BNGAP by adding specific training in how to move forward the DEI mission in academic medicine in a scholarly way.<sup>26,27</sup> As predicted by self-determination theory, scholars who have participated in the LEAD Program identified concrete ways in which they planned to change their own actions and have continued to present their own DEI scholarship across our institution. This demonstrates the potential of developing local GME-wide leadership programs that engage trainees and mentors



**FIGURE**  
Scholarly Output From First 3 Cohorts of LEAD Program Scholars

Note: 2019–2020 regional and national disseminations impacted by the COVID-19 pandemic.

to be at the forefront of leading institution-level change and improve the culture of academic medicine to value DEI scholarly output.

Though the LEAD Program has many benefits, we recognize that there are challenges to implementing such a large-scale program. The goals of this program had to be balanced with the demands of clinical training and fatigue for scholars, especially across various departments and medical training programs. LEAD requires coordinating curricula and schedules across multiple departments. The scholar and mentor enthusiasm for scholarship dissemination must be balanced with the funding limitations and schedule flexibility to attend monthly sessions in addition to presenting nationally. Since some scholars felt that there was overemphasis on the workshop development in the first cohort, we have been mindful in subsequent cohorts to emphasize that the workshop development is a way of applying leadership and scholarship skills. Furthermore, we could explore other types of capstone projects that would create DEI scholarship opportunities for scholars while leveraging applicable leadership skills.

Institutional engagement and support at the highest levels of leadership are vital to sustaining large scale programs. As noted by the NCS Resident Mentoring Program and BNGAP, we found that scholars need protected educational time and dedicated mentors.<sup>26,27</sup> Mentors were a key part of our instructional design since the literature shows it is important to support trainees in presenting their DEI scholarship and promote the dynamic leadership capacity of residents and fellows who spearhead in this field of research.<sup>37–39</sup> This will enable residents and fellows with support of mentorship to be at the forefront of developing DEI efforts across medical training programs that are strategic in building institutional engagement and capacity for diversity in all aspects

of academic medicine.<sup>27,40</sup> Programs like LEAD can foster a sense of belonging for residents and fellows through shared understanding of diverse experiences and building more inclusive communities in academic medicine that have been historically hard to achieve.<sup>41,42</sup> By including allies as well, there is an opportunity to create meaningful culture change.

We recognize in this unprecedented time that tremendous efforts to increase UIM representation through DEI initiatives cannot be meaningfully sustained unless our medical institutions simultaneously recognize and develop new infrastructures to eradicate structural racism embedded within academic medicine that undermines this advancement.<sup>15,43,44</sup> We must develop and empower our next generation of diverse medical leaders now to understand structural inequities. Otherwise, continued inequities will reinforce the “leaky” pipeline<sup>45</sup> and curtail any progress toward a diversified and accurately representational academic medicine leadership. It is not sufficient to focus only on recruitment without intentional development of inclusive practices, sustained support to develop innovative programs, and metrics to track how success is achieved.<sup>7,39,46,47</sup> The LEAD Program is a framework to address these matters with intentionality, creating a safe space for inclusivity and providing room for curricular adaptation with metrics to tackle our dynamic understanding of DEI-related concepts with tangible strategies.

We recognize that our study has limitations. We conducted our research in a single institution with a self-selected sample. Selection bias may have influenced our results and could limit the generalizability of our findings. To minimize the impact of the biases, we collected perspectives from 99% of LEAD scholars. In addition, our study presents self-reported behavior change and intended behavior change, and future studies should investigate outcomes of changed behavior. Finally, the COVID-19 pandemic may have affected the scholarly output of our third cohort. Despite these limitations, our study offers an important contribution to the existing literature by presenting a novel leadership education program to advance DEI that includes diverse viewpoints from residents and fellows at all levels of training and across multiple subspecialties. Additional studies are needed to measure the long-term benefits of the LEAD Program, including internal motivation, sense of belonging, professional identity formation, and long-term career leadership roles and scholarly output of LEAD scholars.

## Conclusions

The LEAD Program is an innovative model for addressing structural barriers to the promotion,

TABLE 3

Self-Efficacy, Behavior Change, and Future Intended Behavior Change Identified by LEAD Scholars

Question/Categories	Codes	Representative Quotes
Areas of self-efficacy scholars identified they developed in the LEAD Program	Fostering inclusive environments Mentorship Strong foundation in DEI concepts Need for diversity initiatives Disparities in academic medicine for UiM faculty Implicit bias Microaggressions Stereotype threat Allyship Social justice Leadership Self-compassion Creating an interactive workshop Better communication	“Importance of fostering an inclusive environment to create diversity.” “Saw the impact of directed attention towards supporting diversity and inclusion. Learned about the intersection between social justice and academics. Learned how to create a workshop. Learned so many new things about strategies to support diversity and inclusion.” “Strong foundational concepts of diversity. Learned how to build workshop and deliver it.” “The sad state of diversity in medicine, the state of affairs of minorities in medicine, the difficulty of the logistics of such a large program. The dedication of the leaders.” “Various types of leaders and ways to lead, not a one-size-fits-all phenomena.”
Practices scholars have already changed due to the LEAD Program	Recognize/act on microaggressions and racism Be aware of bias Address privilege Be proud to be different Amplify voices of UiM/women Incorporate diversity topics/work into career Focused mentorship Self-compassion Use thoughtful language Mindful of leadership style Incorporate workshop skills	“Spending a lot of time reading and educating myself on anti-racism thanks to the materials sent out by LEAD members. Speaking out when I hear racist behaviors rather than staying silent to maintain the status quo. Thinking more about how to act as an ally to others in the way that many have acted as an ally to me in my coming out process.” “Don’t be afraid to speak up about privilege, unconscious bias, or microaggressions.” “Explicit about amplifying voices of UiM/women.” “Yes, I will be more confident taking the lead in introducing topics of diversity.”
Practices scholars intend to change in future practice with colleagues and/or with patients and families	Empowered to advocate for diversity Create more diverse workspaces Become more informed Share with division Contribute to recruiting diverse residents Become more aware of microaggressions Increase participation in advocacy (groups, for patients, systemic) Prioritize finding mentors Consider personal biases with understanding patients Be an ally Be more intentional with diversity and leadership Engage community	“Feel proud to be different and try to bring something valuable to my program by coming from a different place with different perspectives.” “Continue to consider my personal biases and strengthen my understanding of where my patients are coming from.” “Feel more empowered to be an advocate for diversity.” “Will prioritize finding mentors and being a mentor for my professional network. Advocate at systematic level for my patients.” “My plan is to definitively continue to do work to promote diversity and inclusion. In many ways, this work to me is just as important as my clinical work. Everything I do: patient care, research, and teaching is informed by this notion, but I think it will also be important in my career to have an explicit focus on promoting diversity and inclusion.”

Abbreviations: LEAD, Leadership Education in Advancing Diversity; DEI, diversity, equity, and inclusion; UiM, underrepresented in medicine.

inclusion, and retention of UiM trainees by fostering leadership and scholarship capacity in DEI.

## References

- Mendoza FS, Walker LR, Stoll BJ, et al. Diversity and inclusion training in pediatric departments. *Pediatrics*. 2015;135(4):707–713. doi:10.1542/peds.2014-1653
- Association of American Medical Colleges. Diversity in the physician workforce: Facts & Figures 2014. [https://www.aamc.org/initiatives/diversity/179816/facts\\_and\\_figures.html](https://www.aamc.org/initiatives/diversity/179816/facts_and_figures.html). Accessed September 1, 2021.
- Deville C, Hwang W-T, Burgos R, Chapman CH, Both S, Thomas CR. Diversity in graduate medical education in the United States by race, ethnicity, and sex, 2012. *JAMA Intern Med*. 2015;175(10):1706–1708. doi:10.1001/jamainternmed.2015.4324
- Meeks LM, Jain NR, Moreland C, Taylor N, Brookman JC, Fitzsimons M. Realizing a diverse and inclusive workforce: equal access for residents with disabilities.



- J Grad Med Educ.* 2019;11(5):498–503. doi:10.4300/JGME-D-19-00286.1
5. Association of American Medical Colleges. Addressing Racial Disparities in Medical Education. <https://www.aamc.org/media/37286/download>. Accessed September 1, 2021.
  6. Salsberg E, Richwine C, Westergaard S, et al. Estimation and comparison of current and future racial/ethnic representation in the US health care workforce. *JAMA Netw Open.* 2021;4(3):e213789. doi:10.1001/jamanetworkopen.2021.3789
  7. Price EG, Gozu A, Kern DE, et al. The role of cultural diversity climate in recruitment, promotion, and retention of faculty in academic medicine. *J Gen Intern Med.* 2005;20(7):565–571. doi:10.1111/j.1525-1497.2005.0127.x
  8. Whitla DK, Orfield G, Silen W, Teperow C, Howard C, Reede J. Educational benefits of diversity in medical school: a survey of students. *Acad Med.* 2003;78(5):460–466. doi:10.1097/00001888-200305000-00007
  9. Marrast L. 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. doi:10.1001/jamainternmed.2013.12756
  10. Owen WF, Carmona R, Pomeroy C. Failing another national stress test on health disparities. *JAMA.* 2020;323(19):1905–1906. doi:10.1001/jama.2020.6547
  11. Yancy CW. COVID-19 and African Americans. *JAMA.* 2020;323(19):1891–1892. doi:10.1001/jama.2020.6548
  12. Trent M, Dooley DG, Dougé J, Section on Adolescent Health, Council on Community Pediatrics, Committee on Adolescence. The impact of racism on child and adolescent health. *Pediatrics.* 2019;144(2):e20191765. doi:10.1542/peds.2019-1765
  13. Yancy CW. Academic medicine and Black Lives Matter: time for deep listening. *JAMA.* 2020;324(5):435–436. doi:10.1001/jama.2020.12532
  14. Philipsborn RP, Sheffield P, White A, Osta A, Anderson MS, Bernstein A. Climate change and the practice of medicine: essentials for resident education. *Acad Med.* 2021;96(3):355–367. doi:10.1097/ACM.00000000000003719
  15. Ansell DA, McDonald EK. Bias, Black lives, and academic medicine. *N Engl J Med.* 2015;372(12):1087–1089. doi:10.1056/NEJMp1500832
  16. Dyrbye L, Herrin J, West CP, et al. Association of racial bias with burnout among resident physicians. *JAMA Netw Open.* 2019;2(7):e197457. doi:10.1001/jamanetworkopen.2019.7457
  17. Osseo-Asare A, Balasuriya L, Huot SJ, et al. Minority resident physicians' views on the role of race/ethnicity in their training experiences in the workplace. *JAMA Netw Open.* 2018;1(5):e182723. doi:10.1001/jamanetworkopen.2018.2723
  18. Rodríguez JE, Campbell KM, Pololi LH. Addressing disparities in academic medicine: what of the minority tax? *BMC Med Educ.* 2015;15(1):6. doi:10.1186/s12909-015-0290-9
  19. Cyrus KD. Medical education and the minority tax. *JAMA.* 2017;317(18):1833. doi:10.1001/jama.2017.0196
  20. Khan NR, Taylor CM, Rialon KL. Resident perspectives on the current state of diversity in graduate medical education. *J Grad Med Educ.* 2019;11(2):241–243. doi:10.4300/JGME-D-19-00062.1
  21. Dixon G, Kind T, Wright J, Stewart N, Sims A, Barber A. Factors that influence underrepresented in medicine (UIM) medical students to pursue a career in academic pediatrics. *J Natl Med Assoc.* 2021;113(1):95–101. doi:10.1016/j.jnma.2020.07.014
  22. Mullangi S, Jagsi R. Imposter syndrome: treat the cause, not the symptom. *JAMA.* 2019;322(5):403–404. doi:10.1001/jama.2019.9788
  23. Pololi L, Cooper LA, Carr P. Race, disadvantage and faculty experiences in academic medicine. *J Gen Intern Med.* 2010;25(12):1363–1369. doi:10.1007/s11606-010-1478-7
  24. Sadowski B, Cantrell S, Barelski A, O'Malley PG, Hartzell JD. Leadership training in graduate medical education: a systematic review. *J Grad Med Educ.* 2018;10(2):134–148. doi:10.4300/JGME-D-17-00194.1
  25. Sklar DP. Leadership in academic medicine: purpose, people, and programs. *Acad Med.* 2018;93(2):145–148. doi:10.1097/ACM.00000000000002048
  26. Pachter LM, Kodjo C. New Century Scholars: a mentorship program to increase workforce diversity in academic pediatrics. *Acad Med.* 2015;90(7):881–887. doi:10.1097/ACM.0000000000000669
  27. Sánchez JP, Castillo-Page L, Spencer DJ, et al. Commentary: the building the next generation of academic physicians initiative: engaging medical students and residents. *Acad Med.* 2011;86(8):928–931. doi:10.1097/ACM.0b013e31822220df
  28. Dickerman J, Sánchez J, Portela-Martinez M, Roldan E. Leadership and academic medicine: preparing medical students and residents to be effective leaders for the 21st century. *MedEdPORTAL.* 2018;14:10677. doi:10.15766/mep\_2374-8265.10677
  29. Niemiec CP, Ryan RM. Autonomy, competence, and relatedness in the classroom: applying self-determination theory to educational practice. *Theory*

- Res Educ.* 2009;7(2):133–144. doi:10.1177/1477878509104318
30. Skeff KM, Stratos GA, Bergen MR. Evaluation of a medical faculty development program: a comparison of traditional pre/post and retrospective pre/post self-assessment ratings. *Eval Health Prof.* 1992;15(3):350–366. doi:10.1177/016327879201500307
  31. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* 2005;15(9):1277–1288. doi:10.1177/1049732305276687
  32. Jones J, Rice K, Cueto V, et al. Increasing health care workers' proficiency with using professional medical interpretation: a workshop. *MedEdPORTAL.* 2020;16(1):11017. doi:10.15766/mep\_2374-8265.11017
  33. Rivera N, Feldman EA, Augustin DA, et al. Do I belong here? Confronting imposter syndrome at an individual, peer, and institutional level in health professionals. *MedEdPORTAL.* 2021;17(1):11166. doi:10.15766/mep\_2374-8265.11166
  34. Raney J, Pal R, Tiffany Lee T, et al. Words matter: an antibias workshop for health care professionals to reduce stigmatizing language. *MedEdPORTAL.* 2021;17:11115. doi:10.15766/mep\_2374-8265.11115
  35. Raney J, Bhushan D, Leahy P, et al. Words hurt: three steps to remove stigmatizing language from clinical practice. *International Clinical Educators Blog.* <https://icenetblog.royalcollege.ca/2019/09/17/words-hurt/>. Accessed September 1, 2021.
  36. Campbell KM, Rodríguez JE. Addressing the minority tax: perspectives from two diversity leaders on building minority faculty success in academic medicine. *Acad Med.* 2019;94(12):1854–1857. doi:10.1097/ACM.0000000000002839
  37. Beech BM, Calles-Escandon J, Hairston KG, Langdon SE, Latham-Sadler BA, Bell RA. Mentoring programs for underrepresented minority faculty in academic medical centers: a systematic review of the literature. *Acad Med.* 2013;88(4):541–549. doi:10.1097/ACM.0b013e31828589e3
  38. Orr CJ, McLaurin-Jiang S, Jamison SD. Diversity of mentorship to increase diversity in academic pediatrics. *Pediatrics.* 2021;147(4):e20193286. doi:10.1542/peds.2019-3286
  39. Yehia BR, Cronholm PF, Wilson N, et al. Mentorship and pursuit of academic medicine careers: a mixed methods study of residents from diverse backgrounds. *BMC Med Educ.* 2014;14:26. doi:10.1186/1472-6920-14-26
  40. Smith DG. Building institutional capacity for diversity and inclusion in academic medicine. *Acad Med.* 2012;87(11):1511–1515. doi:10.1097/ACM.0b013e31826d30d5
  41. Roberts LW. Belonging, respectful inclusion, and diversity in medical education. *Acad Med.* 2020;95(5):661–664. doi:10.1097/ACM.0000000000003215
  42. Haggins AN. To be seen, heard, and valued: strategies to promote a sense of belonging for women and underrepresented in medicine physicians. *Acad Med.* 2020;95(10):1507–1510. doi:10.1097/ACM.0000000000003553
  43. Hardeman RR, Medina EM, Kozhimannil KB. Structural racism and supporting Black lives—the role of health professionals. *N Engl J Med.* 2016;375(22):2113–2115. doi:10.1056/NEJMp1609535
  44. Acosta D, Ackerman-Barger K. Breaking the silence: time to talk about race and racism. *Acad Med.* 2017;92(3):285–288. doi:10.1097/ACM.0000000000001416
  45. Freeman BK, Landry A, Trevino R, Grande D, Shea JA. Understanding the leaky pipeline: perceived barriers to pursuing a career in medicine or dentistry among underrepresented-in-medicine undergraduate students. *Acad Med.* 2016;91(7):987–993. doi:10.1097/ACM.0000000000001020
  46. Fuentes-Afflick E. Promoting inclusion in academic medicine. *JAMA Netw Open.* 2018;1(4):e181010. doi:10.1001/jamanetworkopen.2018.1010
  47. Person SD, Jordan CG, Allison JJ, et al. Measuring diversity and inclusion in academic medicine: the diversity engagement survey. *Acad Med.* 2015;90(12):1675–1683. doi:10.1097/ACM.0000000000000921



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