

# TRAINING UNDERREPRESENTED EARLY-CAREER FACULTY IN CARDIOVASCULAR HEALTH RESEARCH DURING COVID-19: STRUCTURAL INEQUITIES AND HEALTH DISPARITY

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The COVID-19 pandemic has highlighted race-based health disparities and structural racism in the United States. Enhancing the training of early-career academic and health scientists from underrepresented minority groups (URM) is critical to reduce disparities affecting underserved population groups. A dedicated training program that has been proven to support URM can facilitate career development for junior faculty during the pandemic. This critical support ensures the retention of talented, racially diverse junior faculty who are poised to mitigate structural racism, rather than perpetuate it. We describe how the Cardiovascular Disease Programs to Increase Diversity Among Individuals Engaged in Health-Related Research (PRIDE-CVD) summer institute successfully transitioned from a face-to-face format to a virtual format during the COVID-19 pandemic. As a result, early-career faculty continued to receive the PRIDE-CVD training on research methodology, grantsmanship, career development, and CVD health disparities, especially as related to the pandemic. In addition, the virtual format facilitated networking, promoted mental wellness, and allowed continual mentorship. Collectively, the program provided timely and relevant career development in the COVID-19 era and helped participants navigate the psychosocial challenges of being a URM in cardiovascular health research. *Ethn Dis.* 2021;31(3):411-416; doi:10.18865/ed.31.3.411

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## INTRODUCTION

Structural racism and health disparities are major sources of morbidity in the United States, with people from racial minority backgrounds suffering disproportionately from cardiovascular disease (CVD).<sup>1</sup> The COVID-19 pandemic has exacerbated the effects of discrimination and has revealed structural barriers to care.<sup>2</sup> Black, Indigenous, and Latinx Americans have higher COVID-19 infection, hospitalization, and mortality rates; findings that have been linked with preexisting CVD risk factors.<sup>3,4</sup> To address the growing health care needs of underserved populations and to better understand the unique mechanisms of disparate health outcomes, health systems and academic medical institutions must

strategically support the emerging health care leaders from underrepresented minority (URM) populations.<sup>5</sup> The National Heart, Lung, and Blood Institute (NHLBI)-sponsored Programs to Increase Diversity Among Individuals Engaged in Health-Related Research (PRIDE) has a proven track record for training diverse cohorts of junior faculty who go on to address CVD disparities. The COVID-19 pandemic has revealed additional training opportunities for a racially diverse workforce to address the increasingly apparent health disparities and structural racism.<sup>6,7</sup> Here, we describe the expeditious transition of the Cardiovascular Disease PRIDE summer institute (PRIDE-CVD) into a virtual platform during this global pandemic.

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## METHODS

### The PRIDE-CVD Summer Institute

PRIDE-CVD was designed to address the challenges URM junior faculty confront in career advancement, research funding, mentoring, and academic promotion.<sup>8</sup> Numerous studies and reports demonstrate that compared with their White counterparts, URM academic and

ponents of the program's objectives have historically included face-to-face didactic training in CVD-related health disparities research, grantsmanship and career development skills, networking opportunities with CVD experts, and funding for small pilot research projects. The PRIDE-CVD program has demonstrated success through increased number of publications, grant funding, and promotion for prior participants.<sup>6,8</sup>

### The Virtual PRIDE-CVD Transition during COVID-19

The 2020 PRIDE-CVD cohort of scholars was the first to have an entirely virtual training and mentoring experience. This cohort included early career assistant professors from 10 academic institutions across the United States. The cohort included eight females and two males, two scholars with a medical degree (MD) and eight scholars with a doctorate degree (PhD). Scholars represented diverse disciplines including biomedical engineering, psychology, public health, epidemiology, medicine, surgery, nursing, and biology. Research interests were equally diverse and included biological, societal, geographic, environmental, and socio-behavioral areas related to CVD and health outcomes among racial and ethnic minority populations.

The unprecedented nature and global spread of COVID-19 fortuitously provided an impetus for the rapid adoption of the latest technological advancements available for remote learning. Traditionally, the annual summer program is held face-to-face at the Brooklyn, NY campus of The State University of New York

(SUNY) Downstate Health Sciences University. In 2020, the PRIDE-CVD faculty built upon their decades of teaching experience to deliver a novel pedagogical program for junior faculty career development.<sup>10,11</sup> Rather than cancelling the 2020 program, PRIDE-CVD was adapted for virtual delivery using the video-based conferencing application, Zoom.<sup>12</sup> The program maintained its two-week format and took place from June 14, 2020 to June 26, 2020. Participant requirements included videoconferencing ability, which was available for all 10 members of the cohort and all PRIDE-CVD instructors.

## RESULTS

### Adaptation of the Training Curriculum

In addition to a change in the method of content delivery, three other important modifications to the traditional curriculum occurred. First, instructors emphasized COVID-19 and its associated race-based health disparities. Second, instructors paid special attention to other important current events including the murders of George Floyd and Breonna Taylor. Specifically, instructors focused on the link between social justice and health equity. Due to the mental burden of the pandemic and civil unrest, the third change in the curriculum was the incorporation of daily mental wellness sessions. These 40-minute mid-day wellness sessions included mindfulness and stretching that were guided by a trained occupational therapist. The session helped to alleviate tensions caused by long

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clinical researchers are less likely to receive National Institutes of Health (NIH) research funding, less likely to receive promotion and tenure, and more likely to report social isolation in academia.<sup>9</sup> Since its inception at the State University of New York Downstate Health Sciences in 2006, the PRIDE-CVD summer institute has effectively supported URM scholars in enhancing research productivity and developing successful academic careers. Important com-

hours of being in front of a computer screen. These sessions highlighted the importance of self-care and provided tools to ease scholars' psychosocial burdens. Otherwise, the overall format of the program was maintained.

Each instructor held 2- to 4-hour didactic sessions within the themes of CVD health disparities, research skills, and aspects unique to URM faculty career development. PRIDE-CVD faculty shared their own trajectory in navigating upward mobility in academia. Furthermore, the faculty discussed diverse non-traditional methods for engaging communities in research and research implementation during and after the pandemic. Scholars had time allotted for questions, comments, and the unique opportunity to network with the faculty and peers. Scholars had ample opportunity to network with instructors and faculty and to receive guidance on their individual seed grant proposals called small research projects (SRP).

### **Ongoing Effects of the Virtual Training Program**

After the 2-week virtual summer institute, the cohort has continued to meet with the PRIDE-CVD faculty on a quarterly basis. During these group meetings, scholars take turns to report updates on their SRPs, other ongoing research, manuscripts, and professional development. The PRIDE-CVD faculty invites alumni and expert guests to attend the meetings to provide specific, individualized feedback. The frequent meetings are intended to provide continued support as the scholars implement their SRPs and develop a category R or K proposal for NIH funding.

To further adapt the virtual training program, the 2020 cohort was encouraged to provide feedback and guidance for the iterative development of future PRIDE-CVD summer institutes. Scholars provided feedback verbally during the 2-week summer sessions, during quarterly meetings, and formal surveys. The evaluation surveys included a progress report and feedback regarding ongoing mentoring experiences. The program evaluation for the 2020 cohort is currently being tabulated and will be reported in an upcoming assessment of PRIDE-CVD data gathered over more than 15 years. Notably, verbal feedback from scholars was used to adjust the 2021 summer institute timeframe. The next cohort will also use a virtual training format; however, each lecture will be limited to one hour; there will be an extended lunch break; and there will be more frequent breaks between lectures. Other curriculum changes will be maintained.

### **STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS OF THE PRIDE-CVD VIRTUAL PROGRAM**

Numerous benefits and challenges arose from delivering and attending the PRIDE-CVD virtually. The authors conducted a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis (Figure 1). A SWOT Analysis is a strategic evaluation framework for identifying internal and external organization and environmental factors that can enhance or hinder a project.<sup>10</sup> Perceived benefits of the virtual program

included the ability to participate remotely while maintaining physical distancing and reducing the risk of exposure to COVID-19, especially since New York City was the epicenter for COVID-19 during the summer of 2020. The virtual platform provided the opportunity for scholars to gain content knowledge in health disparities, especially in CVD, meet experts located in different parts of the country, the majority of whom are URM themselves, and build a network of peers from diverse disciplines and institutions of higher education. Program participants reported gaining confidence in their ability to present and implement their research projects and to pursue grant opportunities at the NIH and elsewhere.

Most of the challenges faced by the PRIDE-CVD scholars during the summer institute were related to virtual learning and working from home. Several scholars experienced drastic changes to everyday living due to COVID-19 such as adjusting to social distancing measures, altering childcare or caregiver arrangements, and increased employment responsibilities in addition to managing other household responsibilities. Long hours at the computer screen posed another challenge for participants. Most sessions started at 8:30 AM and ended as late as 7:00 PM. The lunch break was a brief 30 minutes, which was felt to be inadequate time to feed oneself and potentially other members of the household. Most scholars needed to balance other clinical, teaching, and research responsibilities while participating in the summer institute. There were also technological challenges such as difficulties

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>● Longstanding NHLBI-funded training and mentoring grants</li> <li>● Dedication to increasing representation of underrepresented minorities in cardiovascular health disparities research</li> <li>● Scholars exposed to well-established and renown national and international cardiovascular health disparities researchers</li> <li>● Flexibility of program to be offered entirely online</li> <li>● Competitive funding of SRP offered to scholars</li> <li>● Scholars' participation and attendance fully funded</li> <li>● Multidisciplinary scholars cohort promotes networking and collaboration</li> <li>● Intensive training and development in health disparities research and grant writing</li> <li>● Access to strong mentorship by established principal investigators</li> <li>● Scholars have access to build social capital with seasoned investigators and more than 114 scholars from previous cohorts</li> <li>● Continuous monitoring of scholars' activities after the summer institute is completed</li> <li>● Potential increase in research and scholarship productivity as a result of participation</li> <li>● Wellness session to promote scholars' wellbeing</li> </ul>	<ul style="list-style-type: none"> <li>● Remote virtual learning with extensive screen time</li> <li>● No onsite face-to-face interactions limit interpersonal connections</li> <li>● Unable to physically experience the community-based participatory research laboratory in person</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>● Leverage and scale-up virtual infrastructure to debut as premier online professional development program for underrepresented minority researchers</li> <li>● Increase SRP award budgets based on sustained award funding from previous scholar cohorts</li> <li>● Increase the number of participants and extend the program to additional underrepresented junior faculty by increasing the overall budget for PRIDE programs</li> </ul>	<ul style="list-style-type: none"> <li>● Potential decreased enrollment due to lack of interest in an online scholars program</li> <li>● Loss of financial support to attend – shifting burden of cost to scholar</li> </ul>

Figure 1. SWOT analysis of PRIDE-CVD program during COVID-19.

with internet connectivity. In such situations, however, PRIDE-CVD program facilitators provided remote guidance. Despite the numerous challenges, all 10 scholars successfully completed the two-week program.

## DISCUSSION

In this report, we describe the methods by which a leading junior faculty career development program was able to adapt effectively and effi-

ciently to meet the needs of URM participants during the COVID-19 pandemic. The PRIDE-CVD example is one that provides important insight on successful components to implement as virtual training programs are

becoming ubiquitous. During these challenging times, the PRIDE-CVD program provided uninterrupted support to a diverse group of junior faculty clinicians and researchers. By incorporating current societal issues within the curriculum, tailoring the content to the unique challenges of URM faculty, and focusing on mental wellness, the PRIDE-CVD program delivered a stable product to support the mission of training diverse faculty who will address the growing health disparities and champion

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health equity in CVD in America.

Intentional efforts for recruitment and retention of URM faculty include mentoring, training, and development toward promotion and tenure.<sup>11</sup> The COVID-19 pandemic has highlighted that diversity, equity, and inclusion need to be part of the core values within academic medical institutions.<sup>2,13</sup> Furthermore, such institutions have the societal and moral responsibility to take actionable steps

to produce equitable outcomes.<sup>11</sup> These efforts must go beyond mere numbers and must include the creation of fertile environments in which diversity can grow and flourish.

The NIH contends that overall research quality, recruitment, and public trust are enhanced by having a diverse research team as they tend to outperform homogenous teams.<sup>14</sup> Younger generations of researchers should be supported as well. Stronger efforts need to focus on developing career pathways through early exposure and engagement in research during the undergraduate years, which is paramount to reaching this goal. Additionally, high visibility of URM with doctorates is essential to show feasibility and accessibility to earning a terminal degree.<sup>15</sup>

### **Implications for Workforce Development in Health Care and Academia**

A racially diverse workforce can improve clinical care for an increasingly diverse American population and, racial diversity at the workplace can increase scientific discovery. Comprehensive action plans from health care accrediting bodies and academic institutions are needed to address health inequities while supporting the wellbeing of the faculty. Institutions must actively work to remove systemic barriers that stifle or prevent URM faculty members' success. Because the intersection of race, gender, and other identities has additional implications for diversity, we also recognize that the pandemic has exacerbated some of the pre-existing gender disparities in academia. Nationwide, female scientists' productivity in academia has

been disproportionately impeded by the pandemic.<sup>16</sup> The disproportionate decline in female scientist productivity may ultimately lead to a slowdown in their career advancement due to the cancellation of tenure promotions and disruptions in establishing themselves as independent researchers.<sup>17</sup> Fortunately, the PRIDE-CVD program has historically helped to mitigate gender-based challenges for its scholars and will continue to provide a much-needed support network to its majority female 2020 cohort.

## **CONCLUSIONS**

As the world continues to grasp the socioeconomic and emotional challenges brought to light by the COVID-19 pandemic, efforts to address health disparity and inequities must prevail. Professional development training targeted to URM junior faculty, researchers, and clinicians must adapt to a new normal, which leverages virtual education. A look at the PRIDE-CVD program efforts to sustain and provide support to URM early-career faculty amid the pandemic offers higher education and research institutions a model to support similar approaches in training their URM early-career faculty.

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CONFLICT OF INTEREST

No conflicts of interest to report.

AUTHOR CONTRIBUTIONS

Research concept and design: Diallo, Alabi, Johnson, Okoro, Ramos, Nelson, Boutjdir; Acquisition of data: Alabi, Groves; Data analysis and interpretation: Boutjdir; Manuscript draft: Diallo, Alabi, Groves, Johnson, Okoro, Ramos, Nelson; Acquisition of funding: Boutjdir; Administrative: Diallo, Groves, Johnson, Okoro, Ramos, Nelson; Supervision: Diallo, Alabi, Johnson, Boutjdir

REFERENCES

1. Carnethon MR, Pu J, Howard G, et al; American Heart Association Council on Epidemiology and Prevention; Council on Cardiovascular Disease in the Young; Council on Cardiovascular and Stroke Nursing; Council on Clinical Cardiology; Council on Functional Genomics and Translational Biology; and Stroke Council. Cardiovascular Health in African Americans: A Scientific Statement From the American Heart Association. *Circulation*. 2017;136(21):e393-e423. <https://doi.org/10.1161/CIR.0000000000000534> PMID:29061565
2. Yancy CW. COVID-19 and African Americans. *JAMA*. 2020;323(19):1891-1892. <https://doi.org/10.1001/jama.2020.6548> PMID:32293639
3. Mackey K, Ayers CK, Kondo KK, et al. Racial and ethnic disparities in COVID-19-related infections, hospitalizations, and deaths : a systematic review. *Ann Intern Med*. 2021;174(3):362-373. <https://doi.org/10.7326/M20-6306> PMID:33253040
4. Ogedegbe G, Ravenell J, Adhikari S, et al. Assessment of racial/ethnic disparities in hospitalization and mortality in patients with Covid-19 in New York City. *JAMA Netw Open*. 2020;3(12):e2026881. <https://doi.org/10.1001/jamanetworkopen.2020.26881> PMID:33275153
5. Johnson AE, Birru Talabi M, Bonifacino E, et al. Considerations for racial diversity in the cardiology workforce in the United States of America. *J Am Coll Cardiol*. 2021;77(15):1934-1937. <https://doi.org/10.1016/j.jacc.2021.02.043> PMID:33858629
6. Fabris F, Rice TK, Jeffe DB, Czajkowski SM, Boyington J, Boutjdir M. Junior faculty

- career development through an NHLBI program to increase diversity in cardiovascular health-related research. *J Am Coll Cardiol*. 2016;67(19):2312-2313. <https://doi.org/10.1016/j.jacc.2016.01.087> PMID:27173042
7. Boutjdir M, Aromolaran AS, de Las Fuentes L, et al. Research education and mentoring program in cardiovascular diseases for under-represented junior faculty from NHLBI SIPID/PRIDE. *J Am Coll Cardiol*. 2019;73(14):1861-1865. <https://doi.org/10.1016/j.jacc.2019.01.042> PMID:30975303
8. Rice TK, Liu L, Jeffe DB, et al. Enhancing the careers of under-represented junior faculty in biomedical research: The Summer Institute Program to Increase Diversity (SIPID). *J Natl Med Assoc*. 2014;106(1):50-57. [https://doi.org/10.1016/S0027-9684\(15\)30070-5](https://doi.org/10.1016/S0027-9684(15)30070-5) PMID:25684827
9. Ginther DK, Schaffer WT, Schnell J, et al. Race, ethnicity, and NIH research awards. *Science*. 2011;333(6045):1015-1019. <https://doi.org/10.1126/science.1196783>
10. Topor DR, Dickey C, Stonestreet L, Wendt J, Woolley A, Budson A. Interprofessional health care education at academic medical centers: Using a SWOT analysis to develop and implement programming. *MedEd-PORTAL*. 2018;14(1):10766. [https://doi.org/10.15766/mep\\_2374-8265.10766](https://doi.org/10.15766/mep_2374-8265.10766) PMID:30800966
11. Cohen JJ, Gabriel BA, Terrell C. The case for diversity in the health care workforce. *Health Aff (Millwood)*. 2002;21(5):90-102. <https://doi.org/10.1377/hlthaff.21.5.90> PMID:12224912
12. Chawla, A. Coronavirus (COVID-19): Zoom application boon or bane. May 20, 2020. Last accessed June 22, 2021 from SSRN: <https://doi.org/10.2139/ssrn.3606716>
13. Rollston R, Galea S. COVID-19 and the social determinants of health. *Am J Health Promot*. 2020;34(6):687-689. <https://doi.org/10.1177/0890117120930536b> PMID:32551932
14. Valantine HA, Collins FS. National Institutes of Health addresses the science of diversity. *Proc Natl Acad Sci USA*. 2015;112(40):12240-12242. <https://doi.org/10.1073/pnas.1515612112> PMID:26392553
15. Metz J, Maybank A, De Maio F, De Maio F. Responding to the COVID-19 pandemic: The need for a structurally competent health care system. *JAMA*. 2020;324(3):231-232. <https://doi.org/10.1001/jama.2020.9289> PMID:32496531
16. Minello A. The pandemic and the female academic. *Nature*. 2020. <https://doi.org/10.1038/d41586-020-01135-9> PMID:32303729
17. Gabster BP, van Daalen K, Dharr R, Barry M. Challenges for the female academic during the COVID-19 pandemic. *Lancet*.

2020;395(10242):1968-1970. [https://doi.org/10.1016/S0140-6736\(20\)31412-4](https://doi.org/10.1016/S0140-6736(20)31412-4) PMID:32563275