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Increasing Diversity and Capacity in HIV Behavioral and Social Science Research: Reflections and Recommendations From the Inaugural Cohort of the Mid-Atlantic CFAR Consortium (MACC) Scholars Program

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Problem Statement: There is a need to increase diversity among both researchers and participants in the area of HIV scholarship. The Mid-Atlantic Center for AIDS Research Consortium (MACC) Scholars Program was developed to promote diversity among HIV-related researchers and participants.

Approach: Four Scholars were provided with mentorship from senior investigators at Johns Hopkins University, George Washington University, and the University of Pennsylvania. Each Scholar was awarded a grant to develop a pilot study on a topic related to HIV-prevention, treatment, or care. The paper will describe the benefits of the program, challenges that Scholars faced in their projects, and areas for growth of the program from the perspective of the Scholars.

Findings: The Scholars unanimously agreed that the program was essential for gathering pilot data and for receiving practical training in grantsmanship and writing. For challenges, each Scholar encountered unanticipated delays in regulatory approval, resulting in a lag of project start-up. As an indication of the success of the program,

Scholars reported on their productivity for grantsmanship, scientific publications, and grantsmanship over the first year of the program. Finally, the Scholars offered several suggestions for continuing to improve the MACC Program for future cohorts.

Conclusion: The Scholars perceived the inaugural year of the MACC Scholars Program as extremely helpful and productive. Ongoing efforts should be made to continue to promote the development of diverse junior scientists in HIV research.

Key Words: mentorship, training, diversity, grantsmanship

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THE NEED FOR MENTORING JUNIOR AND MINORITY HIV/AIDS INVESTIGATORS

Nationwide, there is a lack of diversity in academia. Diversity gaps are apparent both for faculty conducting research^{1,2} and research participants.³ Enhancing diversity among HIV researchers and participants is important because social injustice is intimately linked to the HIV epidemic.⁴ Furthermore, enhancing diversity among researchers may increase diversity of research participants because they may encounter a more culturally acceptable environment. A variety of national agencies have dedicated funding to address the lack of diversity at all levels of the academic continuum, including from high school to undergraduate and from postbaccalaureate to early academic career programs.⁵ However, diversity promotion also requires local attention in addition to national-level initiatives.

For the past 2 years, the Center for AIDS Research (CFAR) Social and Behavioral Science Research Network annual meeting has included some discussion of the lack of diversity among researchers in the HIV/AIDS realm. One of the missions of the CFAR, sponsored by the National Institutes of Health (NIH), is to mentor new and underrepresented minority investigators in HIV research and to encourage diverse research participants. In 2018, the Mid-Atlantic CFAR Consortium (MACC), including George Washington University, Johns Hopkins University and the University of Pennsylvania, developed the MACC Scholars Program in part to address the lack of diversity across race/ethnicity, sex and gender, sexual orientation, and socioeconomic status among HIV researchers in this region of the United States. Additionally, the program seeks to promote diversity in research study participants in the Mid-Atlantic region and among those who bear the greatest burden of

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disease in particular. Herein, the junior investigators provide an overview of the MACC Scholars Program, describe the benefits and challenges of the program, and suggest ideas to improve the program for future cohorts and for program development at other CFARs.

OVERVIEW OF THE MACC SCHOLARS PROGRAM

The MACC Scholars Program offered a unique opportunity for underrepresented minority junior investigators to receive mentorship from renowned experts in HIV research across MACC institutions. This initiative was piloted in 2017 as a year-long program for senior HIV researchers to mentor junior investigators in the Mid-Atlantic region (i.e., Baltimore, Philadelphia, and Washington D.C.) on topics related to HIV. Four scholars were selected for participation, including postdoctoral fellows, assistant professors, and directors of AIDS service organizations. Scholars received mentorship from renowned experts in HIV prevention, treatment and care research, didactic trainings in research design, conduct and ethics, and pilot funding to conduct a research study. Mentorship was informed by evidence-based practices for training junior academics. Specifically, mentees selected their own mentors from their home institutions rather than being assigned to a mentor.⁶ Mentors provided ample support to mentees in individual and group formats, consistent with research suggesting that more frequent contact with mentors is associated with better mentee outcomes.⁷ The program offered \$15,000 in financial support for pilot studies, consistent with evidence that financial support from mentors is linked with career success.⁸

Each of the pilot studies had a different area of focus to promote expansion of expertise. One study explored the feasibility of mailing HIV and sexually transmitted infection self-testing materials to pre-exposure prophylaxis (PrEP)-using men who have sex with men of color. Another study was a cross-sectional, observational study examining neighborhood and social network correlates of engagement along the PrEP care continuum among sexually active emerging adult (aged 18–25) men who have sex with men. Another PrEP-focused study qualitatively explored the optimal behavioral economic strategies to optimize long-term (≥ 1 year) PrEP adherence among PrEP-using Black men who have sex with men in Washington, DC. Finally, the fourth study aimed to understand risk factors for suicide among individuals who are HIV-positive using intensive assessment and electronic medical records. These pilot studies will ideally lead to data to support future R-series grant applications that have a positive impact on the prevention of HIV or the treatment and care of individuals with HIV.

The MACC Scholars Program offered mentorship and professional development opportunities for junior investigators through a variety of platforms. During monthly phone calls, scholars shared updates on project progress, and the mentors offered guidance on research design and implementation. Common discussion topics included regulatory issues, study recruitment for hard-to-access populations, and project management. Monthly phone calls also promoted cross-

institution discussions on the similarities and differences in research implementation in the Mid-Atlantic region. Opportunities for additional external funding were also discussed during monthly meetings. Specifically, during phone calls, mentors offered scholars insight on expanding their pilot studies using NIH research program announcements. Additionally, the scholars discussed standardizing survey instruments across studies to generate pilot data for collaborations on future grant applications. Finally, monthly phone calls provided scholars with opportunities to request professional development advice.

Quarterly in-person meetings were held at each participating CFAR. In addition to the mentors and scholars, quarterly meetings were attended by community members, other CFAR-affiliated investigators, and clinicians who work with HIV-affected populations. Meetings typically began with a welcome by the director of the hosting CFAR, followed by research and clinical presentations from CFAR-affiliated investigators, and research updates from the MACC Scholars. After formal presentations, attendees were allotted 2 hours of discussion to receive in-depth recommendations for project implementation to enhance public health impact.

The MACC Scholars Program also coordinated a mentoring day in advance of the annual Social and Behavioral Science Research Network conference in Bethesda, Maryland in August 2018. This provided an opportunity to receive feedback from prominent HIV researchers across CFARs nationally. The mentorship day offered didactic presentations from leaders in the field, program officers from various NIH funding institutions, and experts in academic professional development. Senior investigators discussed their perspectives on the most pressing issues facing the HIV research and clinical community. Program officers from the NIH discussed strategies to enhance the success of grant applications and described common pitfalls of applications. Professional development topics included a discussion of tactics to improve the quality and quantity of scientific production, including preparation of scientific manuscripts and grant applications. The mentorship day also included the presentation of Scholars' project ideas in small groups with leading researchers and NIH program officers. These presentations offered a fresh perspective on the research questions from outside investigators and experts.

PROGRAM BENEFITS

During one quarterly meeting, the scholars were separated into a small discussion group to delineate their perceptions of the strengths and weaknesses of the training year. The feedback was unanimously positive (Table 1). The award of \$15,000 to complete a pilot study as a junior investigator was a critical benefit of the program. This financial support allowed for scholars to collect pilot data to support their research programs and academic training. Another important component of the program was the access to several supportive senior HIV investigators across institutions in the Mid-Atlantic region. The scholars universally experienced supportive mentorship that encouraged both professional and scientific development. Mentors answered

questions quickly and provided didactic training and feedback along with networking opportunities throughout the training year. Additionally, scholars benefitted from an adaptive training year because applicants had a wide range of expertise in HIV-related research before participating. For example, mentors facilitated connections between the mentee and other experts, which resulted in the generation of new project ideas and opportunities for collaboration on ongoing projects. Finally, another major strength of the program was the opportunity for public accountability. The low ratio of reinforcement that is typical of a career in academia can result in motivational challenges among researchers. Consequently, the availability of mentors and the frequent opportunities for reporting on progress toward research goals were major contributors to success for the scholars. (Table 1).

CHALLENGES FOR THE SCHOLARS

The MACC Scholars faced similar obstacles throughout the mentoring year. Some obstacles paralleled those found in other research areas, but others were unique to HIV-related research. First, most of the scholars had unanticipated delays in receiving institutional review board (IRB) approval, which limited the feasibility of completing pilot projects within the

programmatic timeline. For example, one scholar conducting research on suicide prevention in electronic medical records encountered regulatory delays despite having a similar approved application in a non-HIV-infected sample. Another scholar who explored the feasibility of mailing HIV and sexually transmitted infection self-testing materials among HIV-negative participants in Baltimore experienced unanticipated delays in institutional approval for providing telemedicine services. This suggests the possibility that a “sensitive” sample designation may hinder progress and therefore operate in a discriminatory fashion. IRBs could unintentionally promote structural barriers to the implementation of high-impact HIV research by limiting project implementation in an effort to more fully protect participants in such research. The scholars received didactics on this issue and advice from former and current program officers throughout the training year. In addition, the mentors allowed for a no-cost extension on the projects to accommodate these delays, and we recommend that these extensions are available as needed in future cohorts.

Another obstacle related to project initiation was related to recruitment and advertising. As part of the call for proposals, research projects were intended to address HIV or HIV-related outcomes in underrepresented populations in the Mid-Atlantic region of the United States. Although some scholars had prior experience in primary data collection, others did not. Accessing underrepresented samples required flexibility and collaboration with community resources to achieve target sample recruitment. The mentors provided support to scholars to assist with navigating this challenge.

A final obstacle of the program was identifying and assessing the professional and scientific needs of the scholars. Because the level of research experience, training, and engagement with study populations in the Mid-Atlantic varied among the scholars, it was challenging for the program to assess the mentoring and training needs among individual scholars. For example, the mentoring and training needs of postdoctoral fellows can be quite different from the needs of junior faculty, which can also inherently differ from researchers at community-based AIDS Service Organizations. Future mentoring programs should establish clear mentoring and training goals for junior investigators of varying levels and experience. Additionally, as junior investigators, scholars were often unaware of their professional development needs until challenges emerged. The mentors provided ongoing check-ins with scholars to assist them in identifying training gaps to correct throughout the program.

TABLE 1. Features of the MACC Scholars Program, Scholars’ Accomplishments, and Future Recommendations

MACC Scholars Program Features	MACC Scholar Accomplishments	Recommendations for the Future
Pairing of a scholar with a mentor or team of mentors	Five manuscripts under review or published related to MACC Scholar Projects	Support in prioritizing opportunities and opportunity for peer mentorship
\$15,000 grant to support pilot study	Nine extramural grant applications on projects either closely or generally related to their MACC Scholars study.	Expand requirements for methods of study at time of application, or anticipate a 2 year commitment from scholars
Quarterly in-person meetings for didactics and mentorship	Four awards to MACC Scholars	Additional didactics related to navigating the IRB, overcoming recruitment challenges, working with community advisory boards and community-based organizations, scaling up pilot studies, and didactic training in grantsmanship.
Monthly check-in phone calls with scholars and mentors	Connections with members of the community	Larger pilot funds to support scholars’ effort and increase program feasibility.
Mentorship day, including meeting with program officers, formal didactics, and presentation of progress	Three presentations at scientific conferences, and several under review	Require cross-institution mentorship and at least 1 extramural grant application and 1 publication

MACC SCHOLAR PRODUCTIVITY

By the end of the mentorship year, the MACC Scholars demonstrated scientific productivity by a variety of important benchmarks. Each of research projects is ongoing and in various stages of completion. However, the scholars prepared scientific manuscripts based on their projects, several of which are in preparation, whereas 5 are under review or published (for examples, see Refs. 9,10). The scholars had 3 scientific conference presentations on topics related to their projects. Collectively, the scholars applied for 9 extramural

grant applications on projects either closely or generally related to their MACC Scholars study. They received 4 awards from outside of the MACC Scholars program. Finally, they established connections with members of the community to enhance their productivity, including community advisory boards and non-CFAR affiliated faculty. Therefore, although the studies selected for the program are ongoing, the scholars demonstrated productivity across a variety of important indicators.

SUGGESTIONS FOR THE EXPANDING THE MACC SCHOLARS PROGRAM

The scholars identified some areas for growth and program expansion. Although the program offered numerous opportunities for professional and scientific development, the scholars struggled to prioritize these opportunities. For instance, scholars had opportunities to analyze existing data from a variety of datasets and to apply for a variety of additional awards or extramural grant applications. In future iterations of the MACC Scholars Program, scholars should request tailored recommendations about the most suitable professional development opportunities.

Additionally, because scholars enter the program with a diversity of mentorship needs and desires, individual professional development plans should be designed with each scholar. Although some scholars will benefit from writing workshops, others will benefit from additional training in community-engaged research.

The application for the program could require a more detailed description of the proposed methods for the pilot study. This would prevent the need to dedicate part of the training year to developing the research idea, thereby expediting the start of the pilot study. An alternative would be to have a 2-year cohort to promote more time for project development and implementation.

Future iterations of the MACC Scholars Program should require cross-institution mentorship and/or collaborations. Specifically, requiring mentorship from a CFAR-affiliated researcher outside of the trainees' home institutions may improve their network of mentors and/or collaborators. Although mentors across institutions offered their support throughout the training year, only a few mentees took advantage of these opportunities. Having a requirement for cross-institutional mentorship will allow for a fresh perspective on the development of the trainee and the research project and addressing the HIV microepidemics in the Mid-Atlantic region.

The scholars recommend that future cohorts should be required to submit at least one extramural grant application and at least one HIV-relevant scientific publication during the training year. This will ensure that the trainees receive the benefit of mentorship on writing, grantsmanship, and research methods. This requirement will assist the MACC Scholars Program in ensuring continued funding because deliverables such as publications and grants submitted provide evidence of the success of the scholars. One option to promote collaboration is to encourage a collaborative grant that harnesses unique skills across the scholars. Although this was attempted

during the training year and will likely be pursued in the coming year among the current scholars, deadlines and other priorities prevented the grant from coming to fruition. Requiring a collaborative grant submission may ensure that this important goal is achieved.

The scholars requested more lectures or workshops. Future iterations of the program should also include more didactic workshops and mentoring related to navigating the IRB, overcoming recruitment challenges, working with community advisory boards and community-based organizations, scaling up pilot studies, and didactic training in grantsmanship. Future iterations of the program should also provide larger pilot funds to support scholars' effort and increase program feasibility. Having limited financial resources decreased the feasibility and capacity of the pilot studies. Larger pilot funds would also ensure protected time to execute projects, foster interinstitutional collaboration, and increase productivity.

Future cohorts of MACC Scholars may also benefit if their mentor receives didactics and workshops in providing effective mentoring. Two-day "Mentoring the Mentor" programs have been empirically validated for improving effective communication, aligning expectations, assessing understanding, fostering independence, addressing diversity, and promoting development.¹¹ Most participants in studies on the Mentoring the Mentor program were recruited from CFAR-affiliated institutions across the United States, suggesting the feasibility of MACC Scholar Mentors attending these trainings. Additionally, most of the MACC Scholars Program mentors completed Mentoring the Mentor training program, which contributed to their success and mentors during the inaugural year.

STRATEGIES FOR SUCCESS IN THE TRAINING YEAR

Potential MACC Scholars should consider several strategies for thriving during the program. First, scholars should relish the accountability that is inherent in this training year. The prototypical challenge of a junior scholar is defined by having a multitude of responsibilities. Although junior scholars need to publish frequently in high impact journals, they also must refine skills in grantsmanship and secure external funding. For trainees in teaching institutions, responsibilities are further divided between administrative roles, teaching, mentoring students, research assistants and post-doctoral fellows, committee leadership roles, and, in some cases, clinical responsibilities. Consequently, progressing toward research goals requires discipline and dedication. Even in the HIV research arena, with obvious public health and social justice implications, it can be easy to forget the impact of research when junior scholars struggle with competing demands. The accountability offered by the MACC Scholars Program required that trainees designated necessary time toward scientific productivity. For many scholars, the dedicated time for implementing our projects permitted us to channel our ambitions and apply our passions afforded by the scientific process.

Second, scholars will likely thrive in a program like the MACC Scholars Program if they are hungry to learn from leading and junior investigators in HIV research. For the inaugural year of the MACC Scholars Program, several exciting developments emerged from interactions with senior investigators. Similarly, the scholars universally reported learning from the expertise of fellow junior colleagues. Thus, although the research mentorship may be the selling point of the MACC Scholars Program, building a network of collaborators for future projects across training levels will offer continuing positive consequences after this year.

Third, scholars will benefit from meeting with program officers face-to-face. The MACC Scholars Program offered several platforms for this type of interaction with scientific officers. These meetings were partially responsible for inspiring several grant applications, and they were largely responsible for improving several others from the scholars this year. As scholars develop into independent investigators, the relationships built with program officers will continue to serve an instrumental role in making or breaking success in applying for extramural funding.

Finally, incoming MACC Scholars may benefit from informal mentorship from immediate past MACC Scholars. This style of mentorship is used in the medical profession (watch one, do one, teach one). A “near peer” mentorship opportunity might offer benefits for both the current and the past scholar. For instance, the incoming MACC Scholar may feel less anxious to receive advice from a peer. In addition, the immediate past MACC Scholar may enhance their writing and grantsmanship abilities by offering editing to the new scholar.

CONCLUSIONS

In summary, the MACC Scholars Program mentees had an incredibly productive and important training year. The

lessons learned from their formal and informal mentors through the program were transformational to the scholars’ development as researchers. We are extremely grateful to have been the pilot cohort for this program and are most appreciative to our respective mentors. Finally, we hope that the suggestions offered above will help to ensure the continued success of this extremely important program.

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