

Key Issues in Mentoring in HIV Prevention and Mental Health for New Investigators From Underrepresented Racial/Ethnic Groups

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We examine the challenges and barriers to quality mentoring for new investigators from underrepresented racial/ethnic groups and propose solutions for establishing a robust pipeline of early-career scientists who are well equipped to conduct research on disparities in HIV and mental health. In addition, we review contributions to this special supplement on mentoring and advocate a multi-level strategy that targets funding agencies, academic and research institutions, mentors, and mentees to enhance the diversity of the nation's scientific workforce and ensure that the public health system benefits from innovations derived from the optimal use of existing human capital. (*Am J Public Health*. 2009;99:S87–S91. doi:10.2105/AJPH.2008.155085)

IN RECENT YEARS, SCHOOLS

of public health and medicine, as well as schools in other areas of the health field, have focused renewed attention on the importance of research mentoring and the need to encourage new investigators to make use of this critical developmental tool.^{1–6} A noteworthy change is a new emphasis on the professional training needs of groups that have traditionally been underrepresented in academic research, namely women and members of ethnic minority groups.^{7–12} It is well established that quality mentoring sets the trajectory for future accomplishments^{13–15} and is critical to the guidance, productivity, and success of all new investigators,¹⁶ especially those from underrepresented racial/ethnic groups.^{4,17,18}

High-quality mentoring cultivates the basic and advanced skills required for productive research careers, including teaching and lecturing, making presentations, selecting and managing promising studies, writing and reviewing grants and publications, and networking.^{1,2,6} At each point, these skills build on investigators' previous achievements until reaching target levels of proficiency.

There is an urgent need to close the existing gaps in mentoring between new investigators from underrepresented racial/ethnic groups and those from nonminority groups. A 2005 National Academy of Sciences survey showed that, relative to their peers from nonminority groups, racial/ethnic minority investigators involved in National Institutes of

Health traineeships publish fewer papers, have greater difficulty obtaining academic employment, and experience greater social isolation in their laboratories. In addition, the survey results showed that they believed their ethnic minority status adversely influenced their training experiences. An estimated 50% reported having no formal academic mentor during their traineeship, contrasting sharply with the reports of trainees from nonminority groups.¹⁹ These findings suggest the persistence of real challenges to the professional development of a critical segment of America's scientific workforce, one that has the potential to expand the scope of scientific inquiry, develop solutions to health disparities that can benefit all of society, and maximize the use of human capital.^{19,20}

Barriers to academic success, experienced by many groups, can be attributed to upstream (e.g., access to quality education, family resources) as well as downstream (e.g., employment prospects, availability of role models) sources. Such barriers underscore the importance of improving the quality of mentoring for trainees and early-career investigators from underrepresented racial/ethnic groups. Doing so may contribute in 2 important ways to the eradication of health disparities in American society.

First, a focus on high-quality mentoring may help foster a cadre of well-trained, committed new investigators from underrepresented racial/ethnic groups who are versed in community norms

and values, can bring insights to bear on key issues affecting community health, and can make innovative contributions to the field that benefit all of society. These investigators may bring new perspectives and insights to factors that facilitate or impede health promotion in communities shouldering a disproportionate burden of disease.²⁰ Second, creating and maintaining a robust pipeline of investigators from underrepresented racial/ethnic groups may help target critically needed health and disparities research toward vulnerable communities and increase the recruitment and retention of participants from underrepresented groups in clinical trials and other research studies.

We briefly review challenges and barriers to high-quality mentoring, specifically targeting new investigators from underrepresented racial/ethnic groups; some of these issues have been discussed in detail in this supplement. We define mentoring as a lengthy developmental process leading students and trainees to become productive agents of innovation capable of assuming key leadership roles in their respective fields.¹⁷ In our discussion of underrepresented racial/ethnic groups, we refer in particular to African Americans, Latinos, and American Indians, who together accounted for 27.8% of the US population in 2006²¹ but only 12% of doctorate recipients in that same year.²² We explore solutions to the barriers we identify that may establish and maintain a robust pipeline of early-career

scientists who are well equipped to conduct research on disparities in HIV and mental health.

CHALLENGES TO SUCCESSFUL CAREER TRANSITIONS

A sizable literature has identified the challenges and barriers faced by new scientists attempting to make the transition to become independently funded, productive researchers. These hurdles are particularly salient for new investigators from underrepresented racial/ethnic groups, who also face potentially disempowering experiences of prejudice, stigma, and discrimination.⁸ At the funder level, challenges include unstable funding environments that may reflect varying commitments to ensuring that the scientific workforce is sufficiently representative of the population and poorly defined criteria for judging the success of programs that support new investigators from underrepresented groups.

Although not all programs are likely to be equally effective, there is evidence that high-quality mentoring programs can remediate educational deficits, build requisite skills, create supportive academic environments, provide financial support, and socialize mentees for specific career trajectories.²⁰ Funding decisions on mentoring programs may be skewed by the unrealistic expectation that investigators from underrepresented racial/ethnic groups—some of whom face significant sociocultural, economic, and contextual barriers to quality educational and employment opportunities—will conform to the same timelines and achieve the same rates of professional success as nonminority scientists.^{11,19} Moreover, decisions about establishing

or maintaining programs often lack the benefit of evidence showing which programs are most effective for which groups.²⁰

Foremost among the challenges at the institutional level is the erosion of traditional support for new investigators at a time of increasing academic, research, and clinical responsibilities. In many academic settings, mentoring represents an undervalued, uncompensated activity that can be difficult to pursue in the midst of hectic schedules and other competing priorities.^{4,12} Failure to recognize the long-term commitment involved in mentoring, failure to provide infrastructural support for mentoring activities, and failure to reinforce high-quality mentoring as a core faculty responsibility represent genuine threats to institutions' efforts to cultivate cohorts of well-trained investigators from underrepresented racial/ethnic groups.^{18,23–25}

Moreover, unequal barriers to promotion among new and established scientists from underrepresented racial/ethnic groups, as well as experiences of dissatisfaction and marginalization among scientists at the early stages of their careers, are underappreciated as factors leading to early attrition.^{7,20,26} Finally, a lack of institutional support for formal needs assessments, evaluations, and oversight of mentoring arrangements may attenuate the outcomes of promising programs.¹⁰

Several challenges at the mentor level have been noted. For example, there is a need in the mentor–mentee relationship to address potentially divergent research or professional interests, recognize differences in life experiences, and foster an interpersonally meaningful, motivating, and constructive collaboration.¹²

Limited appreciation of linguistic and cultural differences may weaken mentoring relationships^{24,27} and impede consideration of perspectives and methodologies that might lead to new innovations in public health.²⁸ Finally, the dearth of available mentors may lead some to overcommit themselves to trainees out of a sense of obligation, which may place their productivity in jeopardy and diminish the quality of mentoring they provide.^{7,26}

Challenges also exist at the level of the individual mentee. For example, it can be difficult for early-stage scientists to justify years of training and low, uncertain salaries after attaining what may be the highest level of academic achievement in their family.^{8,20} Indeed, trainees and mentees from underrepresented racial/ethnic groups must balance competing personal priorities and familial or social expectations for income generation and social achievement while managing the conflict between the pursuit of research and service to their communities.⁸ Isolation in the academic environment may become self-fulfilling, impairing mentees' efforts to seek out and to maintain primary and secondary mentoring support (e.g., from mentors, peers, and established advisors from other disciplines).

Also, mentees must avoid settling for a poor fit with their mentor and must allow time for research and writing; moreover, they need to ensure that they participate in the establishment and evaluation of their training goals and progress and not accept unsustainable work–life balances.^{4,29} They must develop a sense of self-directedness and resiliency that, when paired with a galvanized passion for scientific investigation, permits them to

thrive during the long march to a productive, rewarding scientific career.

POTENTIAL SOLUTIONS TO DEVELOPMENT BARRIERS

In 2001, the National Institute of General Medical Sciences convened a workshop to exchange information, develop strategies for enhancing the recruitment and retention of students from underrepresented racial/ethnic groups in biomedical research, and identify solutions to other problems causing leaks in the developmental pipeline. Several observations flowed from the meeting,²⁰ only a few of which we highlight here. First, institutional commitment at the funder level was deemed critical to fostering a robust pipeline of investigators from underrepresented racial/ethnic groups. Stable funding for meetings, training, and research is needed to ensure that resources are directed toward long-term mentoring solutions, even in a tight fiscal climate.

Second, funding agencies should attempt to foster partnerships between well-funded research institutions and minority-serving educational institutions. As an example, earlier in this supplement Flanigan et al. describe a unique partnership between Brown University Medical School's Miriam Hospital and Jackson State University (funded by a National Institutes of Health institutional training grant) in which postdoctoral fellows from underrepresented racial/ethnic groups were trained to conduct behavioral medicine research on HIV infection, mental illness, and substance abuse.³⁰ Also in this supplement, Treadwell et al. underscore the potential value of fostering such strategic alliances

between historically Black colleges and universities and mainstream institutions to maximize the capacity to address disparities in HIV and mental health.³¹

Third, funding institutions should collect the data necessary to monitor and evaluate progress toward recruiting, retaining, and promoting faculty from underrepresented racial/ethnic groups. Such data can inform the use of flexible funding mechanisms to support a diverse and talented pool of trainees through key transition points in their career development. In a related vein, a recent report from the National Institute of Mental Health recommended the use of national mentoring networks designed to facilitate successful transitions at key points in the development of new investigators from underrepresented groups.³²

Academic and Research Institutions

Research education and training are integral components of the core mission of most academic research institutions. Empirical reviews of successful mentoring programs have identified several key elements.¹² First, mentors must be able to prioritize their time specifically for training and make a long-term commitment to this role, developing strong collaborations with community partners.³³ As noted by Wyatt et al. in their article, this may involve developing relationships early in the careers of trainees and new faculty and even interacting with family members to identify and counter pressures to select more lucrative and well-known career paths (e.g., clinical medicine) and to clarify the benefits of research careers.²⁶ Similarly, Jeste et al. suggest that the time, attention, energy, and resources required to establish and maintain these relationships

are possible only with sufficient institutional support and resources for training new investigators, hiring investigators from underrepresented racial/ethnic groups, enhancing program development, and so forth.²³

Second, there is a need for careful attention to the local and systemic factors that contribute to talented faculty from underrepresented racial/ethnic groups leaving their research careers to pursue careers in other areas.³⁴ These factors may include barriers to promotion, unwelcoming professional environments, and other challenges involved in obtaining funds for research, training, or mentoring (e.g., finding mentors with grant-writing expertise, lack of a grant management infrastructure).

Once such factors are identified, institutions can implement effective organizational changes that enhance research training and administrative coordination of training programs, adopt institutional policies that facilitate the professional and scientific advancement of faculty members from underrepresented groups, and emphasize the value of diversity in the scientific enterprise. As an example of the latter, in this supplement Kahn and Greenblatt describe a promising initiative at the University of California, San Francisco, and the Gladstone Institute to formalize mentoring for early-career scientists interested in HIV research.³⁵ There is a critical need to acknowledge and reward quality mentoring as a core value in research training with appropriate recognition, promotional consideration, and compensation.

Third, university administrators must create a positive culture of mentoring that provides mentors with an opportunity to gain recognition as institutional leaders

committed to institutional values and goals and provides mentees with enhanced access to the information and support critical to success in academic research environments.³⁶ As recommended in the National Institute of Mental Health report mentioned earlier, funded research centers can expand opportunities for increasing the pool of qualified investigators from underrepresented racial/ethnic groups by adding trainees to research teams, offering summer training institutes, increasing the breadth of training programs, and partnering with investigators from underrepresented groups at less well-funded institutions.³² Greater attention to the potential for incorporating communities' perspectives and to developing community members' capacity to participate in the conceptualization, implementation, and evaluation of research protocols may create new opportunities to support early-career investigators from underrepresented racial/ethnic groups (L. S. Jemmott, PhD, unpublished data, 2008; F. Y. Wong, PhD, et al., unpublished data, 2008).

Mentors

The shortage of senior mentors from underrepresented racial/ethnic groups is a significant barrier to developing a well-trained cadre of scientists working in the area of health disparities research. Many training programs also lack clear strategic plans for mentoring new investigators. Ad hoc mentoring, the most ubiquitous mentoring model in use, is insufficient to overcome challenges to successful scientific career development.²³ Evidence-based best practices are needed to inform mentoring and career development programs targeting faculty in the biomedical field. To support

the development of new investigators, it may be critical to set realistic timelines and criteria for success, conduct regular assessments of progress, and guide mentees toward the research topics and projects most likely to lead to promising research programs and career opportunities.^{3,13,18}

In many cases, facilitating the successful transition of scientists from underrepresented racial/ethnic groups to independent investigator status may require still other elements. In their article, Zea and Belgrave note that the academic environment faced by many new investigators from underrepresented groups is foreign, populated only sparsely by scientists with whom they share common ethnic, cultural, or economic backgrounds.³⁷ Alegria and Woo suggest that, rather than the nearly exclusive focus on the acculturation of these new investigators to existing academic paradigms, there is a need to explore alternate research paradigms that will better capture the unique perspectives and experiences these individuals bring to the scientific enterprise.²⁸

Special efforts are needed to ensure that investigators from underrepresented racial/ethnic groups are effectively socialized to the academic environment and feel welcome to participate as contributing members.²⁰ As an example, in their article Walters and Simoni advance a mentoring program for American Indians that seeks to integrate cultural values and principles to build stronger mentoring partnerships.²⁷

Simply put, training new cohorts of investigators is extremely time and resource intensive.²⁵ Not surprisingly, there has been a proliferation of multiple or team mentoring approaches that promise

better distribution of mentoring loads, exposure to interdisciplinary perspectives, mitigation of specific deficiencies in academic skill sets, and shared training practices across institutions.^{12,16,38} Team mentoring models may be a particularly effective approach to circumventing the risk of overburdening faculty.^{12,18,26} Given that a single individual may not be capable of simultaneously fulfilling the roles of coach, advisor, supporter, teacher, friend, sponsor, consultant, critic, and role model, establishing a team of mentors, some of whom may be from other fields or subspecialties, may be useful for certain trainees.^{16,39}

However, on the basis of their experience, Kahn et al. suggest that if team mentoring models are to have their greatest value, they must be flexible in design; for example, mentees must be given the latitude to select primary and secondary mentors. The virtues of team mentoring arrangements may include reducing attrition, encouraging active mentee participation, and maximizing the benefit for trainees of meeting with nonsupervisory faculty.³⁸

Mentees

The articles in this supplement have identified many barriers to new investigators' successful negotiation of academic research careers, including a lack of availability of senior investigators with similar ethnic, cultural, or economic backgrounds and unfavorable characteristics associated with the academic environment (e.g., barriers to promotion). However, common themes emerge from existing mentoring programs that offer effective survival strategies for new investigators.

First, early-career investigators should adopt a self-directed approach and actively seek out

support and feedback from peers, mentors, and a diverse pool of informal advisors. Peer mentoring has been found to confer many benefits to new investigators, including social support, socialization to academia, visible role models, and new potential collaborators.^{12,18,19} Learning to identify and use resources available in the academic environment is critical, as evident in the mentoring program described by Dolcini et al in this supplement.³⁶

Second, mentees need to conduct regular self-assessments of their skills and identify relative deficits that may affect their future achievement. Third, after engaging in these critical self-appraisals, mentees should seek out opportunities to acquire new skills or hone existing ones in areas such as networking, teaching, and making presentations as well as writing and reviewing manuscripts, abstracts, and grant applications.⁷

Fourth, mentees from underrepresented groups should seek out opportunities to engage others in the academic environment, allowing them to escape the sense of isolation they often face as a result of the lack of significant numbers of faculty or other role models with similar backgrounds. Attending meetings with or joining associations of researchers who share similar values and experiences may help alleviate this sense of isolation.^{19,20}

In addition, mentees' success will ultimately trace back in part to the extent to which they are able to negotiate a good fit between their own research interests and those of their mentors.¹⁷ Finding research topics that ignite a passion for and commitment to science may be one of the most important milestones for new investigators to meet. Their success will depend as well on the

extent to which they are able to transform their working experiences into strong curricula vitae that accurately reflect their capacity to publish, present to scientific audiences, and participate in grant writing. The challenge to these new investigators will be effectively managing the demands of academic citizenship, such as time-intensive committee work and other activities that do not contribute meaningfully to strengthening their academic and research skills.²⁶ Also, mentees should remain mindful of the commitment required of others in fostering their development and make themselves worthy of this investment of time and resources.²⁵

SUMMARY AND FUTURE DIRECTIONS

At present, a large proportion of potential scientists from underrepresented racial/ethnic groups are lost at key transition points in their developmental trajectories. With each step up the academic ladder, from high school on through full professorships, the representation in science of individuals from underrepresented groups drops substantially.³² Underrepresentation of racial/ethnic minority groups in the scientific workforce of the United States may have important implications for the nation's ability to achieve its goal of reducing health disparities and improving public health for groups at elevated risk for preventable morbidity and mortality.²⁰

Addressing leaks in the investigator development pipeline will require a multilevel approach that includes the implementation of active and effective recruiting and retention strategies for mentorship programs that target key transition periods. Data are needed

that can illuminate the circumstances that lead promising new investigators from underrepresented racial/ethnic groups to pursue nonresearch careers, as well as the factors that optimize retention in the sciences in the face of competing priorities and rewards. Careful attention must be focused on how best to assess mentoring programs for new investigators from underrepresented groups given that the permanent products of such investments may take years to manifest (e.g., manuscripts, grants). Other problems in assessing the impact of mentoring programs can be attributed to overly restrictive criteria for success, unrealistic timelines for mentees to make the transition to independent status, and suboptimal procedures for matching of mentors and mentees.^{19,38}

Taken together, the articles in this supplement offer insights into the challenges involved in maintaining a robust pipeline of investigators from underrepresented racial/ethnic groups, highlight the need for an empirical approach to understanding and remediating attrition among these investigators, and provide examples of existing programs that seek to mitigate these challenges in the service of resolving disparities in HIV and mental health. At present, the dearth of theoretically based research leaves the field in the difficult position of not knowing enough about which mentoring approaches are most effective for which groups.

Moreover, there remain many questions about how best to create a durable sense of excitement, curiosity, and joy of discovery in the biomedical sciences among students and new investigators from underrepresented racial/ethnic groups. Such efforts require

taking stock of lessons learned from novel mentoring approaches that emphasize active learning and intrinsic motivation. The benefits of these activities may include increased academic diversity, improved recruitment and retention outcomes, and establishment of a deeper pool of ideas from which scientific innovations can emerge. More generally, improving the quality of mentoring for individuals from underrepresented groups may ensure that the nation's scientific workforce is more representative of the population, that health disparities receive the critical research attention they require, and that the public health system benefits from innovations derived from the optimal use of existing human capital. ■

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Contributors

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