

# A Call for Training the Trainers: Focus on Mentoring to Enhance Diversity in Mental Health Research

There is a widening disparity between the proportion of ethnic minority Americans in the population and the number of researchers from these minority groups. One major obstacle in this arena relates to a dearth of mentors for such trainees. The present academic settings are not optimal for development and sustenance of research mentors, especially for mentees from underrepresented minority ethnic groups.

Mentoring skills can and should be evaluated and enhanced. Universities, medical schools, and funding agencies need to join hands and implement national- and local-level programs to help develop and reward mentors of junior scientists from ethnic minority groups. (*Am J Public Health*. 2009;99:S31–S37. doi:10.2105/AJPH.2008.154633)

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**DESPITE A GROWING PROPORTION** of people from ethnic minority groups in the US population, there is a glaring shortage of minority mental health researchers in the country. This disparity is expected to worsen during the coming decades. Although Blacks, Hispanics, and American Indians compose 26% of the US population, they receive only 16% of the undergraduate degrees and 9% of the doctoral degrees in science and engineering.<sup>1–3</sup> Only 11% of psychology PhD recipients are members of these underrepresented minority (URM) groups.<sup>4</sup> The National Institutes of Health (NIH) reported that between 1999 and 2003, 4.6% of individuals with support from individual or institutional research training grants of different types (e.g., F31, K01, K08, T32, T34, or T35) were Black, 5.6% were Hispanic, and 0.18% were American Indian.<sup>5</sup> The National Institute of Mental Health (NIMH) reported that in 1998, 16.9% of T32 trainees were Black, Hispanic, or American Indian.<sup>4</sup> Whereas about 10% of NIH trainees are members of these ethnic minority groups, they make up only 3% to 4% of the principal investigators on NIH- and NIMH-funded research and program grants.<sup>1,4</sup>

By the year 2060, members of ethnic minority groups will compose over half of the US population.<sup>6</sup> Greater ethnic diversity in scientific research is important from both moral and practical perspectives: the United States was founded on the premise of full

participation in society and equal access for all, diversity benefits learning, and ethnic minority researchers not only bring unique perspectives to scientific inquiry, but are also more likely to address minority health disparities and have access to minority communities.<sup>3,7,8</sup> Suboptimal ethnic diversity in academia is a multifaceted problem that will require multipronged solutions beginning in childhood and continuing throughout the educational system.<sup>3</sup> Here, we focus on mentoring as one of the critical aspects of research training, especially in relationship to ethnic diversity, while acknowledging the importance of other types of diversity (e.g., gender, language, national origin, religion, sexual orientation, physical disability). We call for and suggest ways of enhancing recruitment, training, and retention of mentors of ethnic minority trainees.

## PUBLIC HEALTH PERSPECTIVE

Members of racial and ethnic minority groups face disparities in both access to and quality of health care.<sup>9</sup> These disparities carry over to mental health care,<sup>10</sup> and members of minority groups who have mental illnesses face even greater disparities in routine, preventive, or emergency medical care. A diverse workforce is desirable for every type of research, including basic sciences, but is particularly warranted for addressing health care disparities. Translational research is needed to move treatments and preventive

interventions not only from bench to bedside, but also from bedside to community. Two aspects of public health research—community-based research and prevention-oriented research—may be particularly attractive to some minority research trainees given their past experience with racism and health care disparity. Because of their first-hand knowledge of these areas along with passion for such research, racial and ethnic minority trainees may bring unique skills to this field.

## NEED FOR RESEARCH ON TRAINING AND MENTORING

There is little empirical research on mentoring URM trainees in the mental health arena. Therefore, a number of our recommendations come not from direct research but from research in related areas as well as our own collective experience. Sedlacek et al.'s<sup>11</sup> recommendation for using published articles on the mentoring, advising, and counseling process and applying them to people of color, along with conducting research and developing models unique to these trainees, should also apply to the mentoring of URM mentees in mental health research.

Although traditional randomized controlled studies on training and mentoring may be impractical and even undesirable, there are ways to conduct informative research, such as formal program evaluations comparing trainees' performance before versus after

the training and possibly the use of control groups of applicants who were accepted into but could not join the training programs or who entered different training programs.<sup>12,13</sup> Such research will be essential to demonstrating what mentoring approaches work best for which types of trainees. For example, a study at the University of Wisconsin, Madison, examined the impact of an 8-week training seminar, made available to participants in the form of a manual, designed for mentors of undergraduate research students. A comparison of those who completed the training (n = 85) with those who had not showed that those who completed the training were significantly more likely to report conversing with students about what they expected from a mentor, to consider issues of cultural diversity, and to hold discussions on mentoring with peers and faculty members.<sup>14</sup>

## OBSTACLES TO RESEARCH CAREERS

Many students from ethnic minority backgrounds are deterred from careers in mental health research by low expectations on the part of others in the environment, a dearth of role models, and a lack of exposure to the culture of scientific research.<sup>15</sup> URM trainees may be further discouraged by the fast pace and lack of flexibility of traditional pathways for progression of a research career or academic tenure track. Another barrier is inadequate financial support and incentives from funding agencies and training institutions to compensate the trainees and their mentors during the training process. This is especially unappealing for URM trainees coming from a lower socioeconomic status background who need to support

their families (sometimes including parents and siblings) while having to pay back student loans.

URM trainees may also feel a conflict between a commitment to provide direct clinical services to underserved populations and a desire to devote time to conducting research in an area that may lack clear relevance to minority concerns. All of these factors tend to contribute to the low recruitment and retention rates of minorities in training programs and academic careers. Another obstacle is a lack of awareness by research professionals of the advantages of having ethnic diversity in the research environment. As a result, the usual informal, *ad hoc* mentoring process may be insufficient to overcome the barriers to a research career. Inadequate mentoring has been identified as a critical barrier to success in higher educational settings.<sup>1</sup>

## RECENT INITIATIVES

Patients, clinicians, researchers, payers, policy makers, funding agencies, and professional organizations all have a stake in the issue of diversity in health research.<sup>16</sup> Over the last 2 decades, institutions such as NIH and the National Science Foundation (NSF) have taken some steps to increase the number of minorities in mental health training institutions by providing funding for this effort. The National Institute of General Medical Sciences oversees NIH's minority-advancement programs and has developed the Minority Opportunities in Research program, which administers both research and training projects to increase minority participation in the biomedical sciences, including RO1-level support.<sup>17</sup>

NSF founded the Alliances for Graduate Education in the

professoriate program to promote recruitment and retention of URM students in science, technology, engineering, and mathematics by linking undergraduate and graduate institutions and launching diversity-promoting policies at institutional and departmental levels. It will be important to measure the impact of these programs on minority recruitment and retention.

## THE CONTEXT OF MENTORING

The word *mentor* comes from Homer's *Odyssey*, in which the character Mentor was described as a "wise and trusted counselor."<sup>18</sup> There are several different definitions of mentoring. Eby et al.<sup>19</sup> identify several critical components of mentoring: learning partnership, mentor's support to mentee, and a relationship between mentor and protégé that is unique, reciprocal but asymmetric, and dynamic. Mentoring is not only a professional relationship but also a personal one.<sup>15</sup> Mentors wear many hats, including career advisor, teacher of research skills, facilitator of professional networking, editor, promoter of scholarly values, advocate, role model, nurturer, and provider of reassurance.<sup>20</sup> Mentoring URM trainees may call for more focus on the personal relationship between mentor and mentee, because the mentor's multicultural experiences interface with the mentee's background and experiences.<sup>21</sup>

## Qualifications and Training of the Mentors

General qualifications for any mentor include a track record of peer-reviewed research publications as first and corresponding author and funding of at least 1

federally funded research grant as principal investigator. A good mentor has a track record of successful mentorship with some publications that have students as first authors. For mentors of URM trainees, a demonstrated commitment to minority-relevant issues, as indicated in the topic areas of the publications or grants, is helpful. Similarly, a history of having successfully mentored minority research trainees is useful, although this preferred qualification may be revised appropriately for relatively junior mentors.

Mentors can benefit from specific mentorship training, both in general and program-specific activities.<sup>22</sup> Self-study resources on mentoring, such as *Adviser, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering*<sup>15</sup> may be provided to mentors. Handelsman et al.'s *Entering Mentoring*<sup>23</sup> includes advice on establishing relationships with new mentees, planning and discussing expectations, resolving difficulties, and developing a mentoring philosophy. Educational seminars with presentations devoted to mentoring can be helpful, as can discussions of articles on mentoring and mentor training sessions with peers. All mentors may take advantage of cultural competence training. Finally, mentors may be matched to trainees based on their mentoring style, and the interactions and results monitored. Such results can then be used to provide feedback to the mentors and improve the process of mentoring.

## Benefits and Obstacles

Mentorship has a benefit even to the busiest academic investigator. In one study of faculty mentors, Busch<sup>24</sup> found several benefits expressed by mentors:

excitement and fulfillment at seeing the protégé's development, incentive to stay on cutting edge of one's field, and enjoying the relationship with the mentee, which becomes increasingly mutual and collegial. Additionally, having a reputation as being someone who cares about mentorship helps attract the best and the brightest of potential trainees.

Mentors of URM trainees face multiple obstacles to successful mentoring, including a dearth of mentoring role models, and not just a lack of long-term institutional support for mentoring, but even financial disincentives to mentoring. Mentors who are themselves members of minority groups may be highly sought after to fill clinical or administrative positions that result in much higher salaries, with a further reduction in time available for research and mentoring. Some of the financial disincentives to a mentoring focus may be alleviated by special grants (e.g., NIH midcareer K awards) that provide funding specifically for mentoring activities.

**The Role of Training Institutions**

Good mentoring is difficult to achieve in a context that does not prioritize it, but there is much that training institutions can do to promote effective mentorship. Simply recognizing that mentoring should occur for all trainees and junior faculty is the first step. For example, the University of Pennsylvania School of Medicine studied its junior faculty members and found that only half had mentors. In response, the school began providing assistance in identifying and assigning mentors to all new faculty members.<sup>25</sup>

The University of California, San Diego, School of Medicine initiated a mentoring program for

junior faculty that included workshops on institutional culture, grant writing, and academic file preparation, as well as one-on-one mentoring by senior faculty. The retention rate for URM junior faculty rose from 58% before the program's implementation to 80%.<sup>26</sup>

Institutional support can also include the use of incentives and resources to "buy" time for mentors and increase salaries for mentees (e.g., the John A. Hartford Foundation, professional associations).<sup>27</sup> Departments can choose to reward mentoring on the part of junior and senior faculty and should give thought to utilizing clinical assignments that fit naturally with the mentor's and protégé's research interests to save time for both parties. Additionally, training sites might consider selecting a faculty series that focuses on mentorship. For example, the Professor of Clinical Medicine (e.g., Professor of Clinical Psychiatry) series in the University of California system is a good fit for academically oriented clinician educators who excel in mentoring.

Lastly, training sites should conduct outcomes research on the efficacy of different research training programs, varied matches between mentees and mentors, and different mentoring techniques. Important outcomes to track would include retention in academia, number of peer-reviewed publications and grants, service in scientific peer review, leadership positions, and service as mentors for the next generation of URM trainees.<sup>28</sup>

**Funding Institutions**

NIH has taken steps to increase minority representation in health research—for example, by providing diversity supplement funding to R01 awards. Other ideas for funding institutions to consider

include providing salary support for mentoring activities of talented mentors who have demonstrated commitment to training minority students (e.g., a midcareer K award focused on mentoring minority trainees). Because it is clear that more minority students need to be recruited into mental health research from earlier stages, funding should be extended early in career development, even to the middle- and high school levels.<sup>27,29</sup>

Another concept that deserves serious consideration is the establishment of a national network of mentors experienced in training ethnic-minority students.<sup>30</sup> This would be particularly valuable for minority mentees at relatively small universities that have few appropriate mentors. Distance learning and distance mentoring could be only a click away.

**Evaluation and Tracking of Mentoring**

The evaluation of mentoring is a critical component of the mentoring process. The first step is usually to identify and involve various stakeholders as facilitators or program evaluators.<sup>12,13</sup> Individuals and groups with a stake in the future direction of the program should play a role in determining its direction by identifying concerns to be addressed in evaluating the program and selecting the criteria that will be used in judging its value. Stakeholders in the present case include minority trainees, mentors, academic institutions, NIH, the scientific community, and the community at large. Evaluation methods may include:

1. Formative and summative evaluations to provide information to program staff, program de-

cision-makers, and potential consumers about the program's merits.

2. Qualitative assessments of trainees and mentors using focus groups and qualitative interviews.
3. Trainee productivity in terms of peer-reviewed publications.
4. Longer-term indicators such as mentees' career trajectory, including subsequent choice of the field of study and a trainee's "academic survival" (i.e., number of years posttraining spent in a full-time academic position).

**SHORT-TERM VERSUS LONG-TERM RESEARCH TRAINING**

There are both strengths and limitations to short-term (e.g., summer) intensive research training.<sup>29</sup> The main advantage is its feasibility for students whose principal goal is to complete their undergraduate, graduate, or medical training and thus have a limited amount of time to devote to research. A summer program is also less expensive than a yearlong one. The immediate goal of short-term programs is not to convert students into independent investigators, but rather to get them interested in research careers in health care. Nonetheless, a limitation of a summer program is that the long-term yield is likely to be lower than that of a multiyear program. Therefore, a long-term follow-up with "booster sessions" and continued reinforcement may be useful.

There are several excellent examples of summer research training programs in geriatric psychiatry supported by the R25 funding mechanism (e.g., Summer Research Institute for fellows and junior faculty, Medical Students'

Summer Training in Aging Research program, Summer Training on Aging Research Topics in Mental Health for graduate and medical students, and a new summer research training program for high school students; all of these programs have a significant proportion of mentors and trainees from ethnic minority groups).<sup>29,31–34</sup> These programs have been successful in attracting some of the best trainees to a specific field of research (e.g., mental health or aging), and the trainees' as well as mentors' evaluations have been highly positive.

In the programs that have allowed for an opportunity for a longer-term follow-up, such as the Summer Research Institute, the trainees' productivity in terms of new federal grants as principal investigator and the number of peer-reviewed publications has been exceptionally strong.<sup>29,34</sup> As the sample sizes of URM trainees in these programs grows, we will further analyze the data to determine significant mediators and moderators of success in this group.

Some minority mentoring programs emphasize intensive one-week institutes that recruit graduate students and junior faculty on a regional or national basis, followed by distance mentoring, such as the Medical University of South Carolina's Institute for Research Minority Training on Mental Health and Aging,<sup>35</sup> the University of New Mexico Mentorship and Education Program,<sup>36</sup> and the Critical Issues in Latino Mental Health Research program of the Robert Wood Johnson Medical School. One example that has gathered international acclaim is the Meyerhoff Scholars Program of the University of Maryland, Baltimore County, which since 2000 has produced scholarship

recipients (435 of 508 students) who have earned science or engineering undergraduate degrees, with 87% of those going on to pursue graduate or professional training.<sup>37</sup>

The Gates Millennium Scholarship Program of the Bill and Melinda Gates Foundation has committed \$1 billion to the support of minority students from undergraduate to doctoral programs, with preliminary findings showing that scholarship recipients were less likely to take out loans and work for pay and were more likely to enroll in competitive undergraduate institutions, take on academic and community leadership roles, complete college, and pursue graduate training than were nonrecipients.<sup>38</sup> An excellent example of a successful mentoring program to diversify the mental health and substance abuse HIV/AIDS research workforce through innovative educational initiatives is a recently established R25 program.<sup>39</sup>

### Variations in Mentoring Needs at Different Stages of Career

Although we have referred to several common elements in mentoring needs (e.g., a role model, friend, advisor) for undergraduate-, graduate-, and postgraduate-level trainees, there are also important differences among these groups. For early career trainees, there is a much greater need for a "hand-holding" type of mentoring help, whereas for advanced mentees, the focus should be on encouraging the development of independence. Undergraduates have numerous career choices, and the rate of success in terms of developing researchers in mental health is likely to be much lower than that for postgraduates who

have already committed themselves to careers in this field. Mentors would need to spend much more time in direct work with junior than with more-senior trainees.

### THE PROCESS OF MENTORING

Good mentoring for minority trainees involves communicating with the mentee before formal training, jointly developing a formal plan for mentoring the trainee, and establishing an excellent working relationship with the mentee, as judged by his or her evaluation of the mentor. As mentor and mentee work together, they can refer back to and revise the formal plan to ensure that all of the goals are met. Although the specific goals will depend on the level of the trainee, facilitating the trainee's productivity in terms of peer-reviewed journal articles and attaining competitive funding would be important for most trainees.

Providing a thorough orientation to the work setting is critical for mentees at all stages, and there are helpful publications in this regard. Barker's book<sup>40</sup> covers laboratory organization, experiment planning, record-keeping, and oral and written communication of data and is a good introduction to bench research for graduate students and postdoctoral trainees. *At the Helm: A Laboratory Navigator*<sup>41</sup> is geared toward junior faculty and provides guidance on running a lab, hiring staff, planning meetings, communication, and manuscript writing. Finally, Bonetta's<sup>42</sup> book provides guidance to postdoctoral trainees and new faculty members regarding academic job searching and negotiating, promotion and tenure, university

organization, staffing a laboratory, managing time and projects, data management, grant writing, manuscript writing, and academic collaborations.

Good mentorship also includes instruction on ethical issues, team building, helping mentees balance personal life and professional work, and establishing appropriate collaborations with other researchers. Sedlacek et al.<sup>11</sup> propose a mentoring approach that includes the acquisition of content knowledge and "cognitive" factors, such as work production, as well as "noncognitive" factors, such as self-concept and self-appraisal, dealing with discrimination, focusing on achieving long-range objectives, developing a support system and leadership experience, and contributing to the community.

Often there is no single person who can provide all that a mentee needs, and a mentoring team is necessary. Thus, if one mentor has the content knowledge desired by the mentee and another one has the cultural background or career experiences that are a better match for the trainee, it would be preferable for that trainee to have two, or even more, mentors. This may be especially applicable for mentees working in the public health and mental health fields, because it is unusual to find a mentor with content expertise in both fields. It is also important for the mentoring team to meet jointly with the trainee on a regular basis to help provide integrated, coherent mentoring across the different fields represented. The University of Arkansas College of Medicine has developed a peer–onsite–distance model of mentoring that assigns peer mentors, onsite mentors, and offsite mentors to URM medical school faculty.<sup>43</sup>

### Research Skill Building

Research skill building involves providing opportunities to develop the skills required to perform research tasks effectively (e.g., acquiring in-depth knowledge of a topic, grant and manuscript writing, data analyses, public speaking, peer reviews, lab management). Opportunities may be provided early for coauthorship on projects involving archival data. Reviewing submitted manuscripts together, with the permission of the journal editor, can be useful for teaching research and manuscript reviewing skills. As with any trainee, regardless of ethnicity, a mentor should assess the mentee's strengths, weaknesses, and learning style and use the results to inform the focus of the training. Mentors may find it necessary to demonstrate extra patience, encouragement, and a nonjudgmental attitude to help understand the mentees' needs.

Areas needing intensive training may be best addressed with formal classroom training (e.g., in biostatistics). The mentor should serve as an advocate for the mentee to request and ensure that time for appropriate didactic seminars and workshops is protected within the institution. Finally, mentors should encourage and support peer-to-peer relationships for minority trainees because many minority trainees report a sense of social isolation.<sup>44</sup>

### Managing the Mentorship Relationship

Campbell<sup>45</sup> offers excellent recommendations for best practices in student–faculty mentoring programs, many of which may apply to URM trainees. It is often helpful for the mentor to explain to the trainee how mentorship is different from a standard supervisory

relationship. Mentees from different cultures might value time focused on building a personal connection rather than immediately discussing research tasks. Taking time to develop such a rapport can facilitate the building of trust needed to formalize the relationship and reduce the mentee's anxiety.

Once the mentorship relationship is established, specific roles and meeting frequency may be formally discussed and documented in writing. The mentor should clearly outline her or his expectations of the mentee (e.g., duties and responsibilities in the lab, attendance of specified meetings and training seminars, writing assignments). One-on-one meetings should occur frequently (several times a month), particularly at the beginning of the training. A mentor may find it necessary to alleviate a protégé's guilt when she or he requests extra training time. Mentors may encourage their trainees to first demonstrate initiative and a genuine interest to learn, to openly discuss with the mentor their personal strengths and weaknesses, and to indicate where most help is needed (e.g., writing, statistics, time management). Mentors should also encourage their trainees to be honest about difficulty when encountering obstacles in fulfilling obligations and deadlines; to find ways to work independently, without being given detailed instructions; and to be proactive about setting an agenda for each meeting and diligent about completing assignments between meetings.

Periodic evaluations by mentors are helpful, including a combination of informal and formal feedback sessions. Extra sensitivity may be required when offering constructive criticism and suggestions to a minority mentee who

may be struggling to adjust to the academic or research environment. Beginning with positive feedback may increase the mentee's receptivity to areas requiring improvement. Mentors may need to share personal experiences or challenges encountered during their own training, thus altering a mentee's belief that theirs are unique difficulties. A mentor may avoid voicing comparisons about how the mentee is doing in relation to peers (especially the nonminority ones) without lowering expectations of the mentee. It is useful to end an evaluation session with encouragement and reassurance that, with continued perseverance, the mentee can indeed master the required research skills. Helping mentees to have a "product"—i.e., something to show for their efforts—reinforces self-efficacy.

### Managing the Academic and Research Environment

For URM trainees, the typical two-factor model of the mentor–protégé relationship should be expanded to include psychosocial and career aspects.<sup>11</sup> A trainee launching a research career requires an understanding of the culture of an academic and research setting. There are several ways a mentor can help a minority mentee better adapt to this unique setting. First, a mentor should take the time to orient and explain what resources the trainee has access to and how to best acquire and utilize them (e.g., administrative support, lab equipment). This would reduce the difficulty a mentee may have in requesting resources out of fear or deference to authority.

Second, a mentor may clarify the setting's professional etiquette (e.g., punctuality, appropriate attire,

communication, accountability). Third, a mentor needs to stress the importance of networking and collaborating with other professionals. Initially, the mentor should facilitate the introduction of the mentee to other researchers in the field both within and outside of an institution. Finally, it may sometimes be useful to provide the minority mentee with assertiveness coaching. Some trainees come from cultures where saying "no" to authority is considered to be an evidence of uncooperativeness or rudeness. Therefore, a mentor may coach the mentees on how to assert and negotiate their own needs (e.g., salary, space, authorship, roles on grants).

### Sensitivity to Cultural Practices

It is important to acknowledge and be open to the unique cultural traits, beliefs, and practices a minority mentee may value (e.g., holidays, family obligations) and accommodate these when possible. A mentor should demonstrate an appreciation for specific cultural traits that may empower mentees to accomplish their research goals (e.g., strong work ethic, teamwork, loyalty). Moreover, a trainee may possess a special skill set such as first-hand knowledge of a minority population under study, including an ability to communicate fluently in their language. A mentor should not, however, assume that the mentees are experts in all minority issues, or even those pertaining to their own group.

A mentor should be sensitive to the fact that a mentee might have experienced racial discrimination in the past and be open to discussing any perceived discriminatory behavior in the research setting.<sup>11</sup> For example, a mentee may interpret certain comments, gestures, or exclusion

from a project or meeting as an act of racial or ethnic hostility. If this is indeed a misinterpretation on the trainee's part, it is important for the mentor to provide clarification.

**CONCLUSIONS**

There is an unacceptable disparity between the fast growing ethnic minority populations in the United States and the number of mental health researchers from these minority groups. This situation is expected to only get worse in near future. One of the most critical ingredients for the development of a research career is the mentor. Yet, the current academic settings present serious barriers to the creation and sustenance of a mentor workforce. A focus on recruitment, training, and the retention of mentors for URM trainees is warranted. Universities, medical schools, and funding agencies need to join hands to implement and evaluate national and local programs to help develop and reward mentors for junior scientists from ethnic minority groups. The time to act is now. ■

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This article was accepted December 20, 2008.

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**Acknowledgments**

This work was supported, in part, by grants from the National Institute of Mental Health to the University of California, San Diego (T32 MH019934, P30 MH66248, and R01 MH64722), and the University of Pittsburgh (P30 MH71944 and R25 MH60473); by the John A. Hartford Foundation Centers of Excellence in Geriatric Psychiatry at the University of California, San Diego, and the University of Pittsburgh; and by the Department of Veterans Affairs.

**Human Participant Protection**

No protocol approval was necessary.

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## Mentoring Early-Career Scientists for HIV Research Careers

James S. Kahn, MD, and Ruth M. Greenblatt, MD

Mentoring is important for early-career HIV researchers; it is key for work satisfaction, productivity, workforce diversity, and retention of investigators in a variety of research settings. Establishment of multidisciplinary research projects often is accomplished through mentoring.

The work of early-career HIV investigators frequently requires networks of collaborators, and networking is regularly facilitated by mentors. A structured mentoring program that avoids unnecessary conflicts or time burdens and connects early-career investigators with senior mentors from different disciplines may stimulate new networking possibilities and lead to effective collaborations among investigators with different skills and perspectives.

Effective mentoring by focused mentors will likely contribute to the skills and networks of investigators necessary for the next generation of HIV investigators. (*Am J Public Health*. 2009;99:S37–S42. doi:10.2105/AJPH.2008.135830)

**DEVELOPING NEW INVESTIGATORS** who are dedicated to HIV research is a task critical to ending the HIV/AIDS epidemic. Research on HIV/AIDS has often moved forward when teams of multidisciplinary investigators worked collaboratively.<sup>1,2</sup> For example, collaborative work between epidemiologists and clinicians helped identify the set of clinical diseases that defined AIDS and the risk factors associated with disease progression. In addition, clinical, behavioral, and translational research have led to the approval of 31 different antiretroviral medications that interfere with HIV replication based on six different mechanisms of action. Furthermore, new investigations that focus on operations research, especially conducted internationally, are transforming the clinical battle against HIV in developing countries.

These scientific accomplishments are truly spectacular; however, future success in ending the epidemic will fall to the next generation of investigators. Because innovation tends to occur among investigators working at the intersections of their fields, early-career

investigators need to be mentored in the value of teamwork and collaborative research as well as in the pursuit of individual excellence. Thus, it will be critical to recruit, train, and establish the next generation of scientists and to help them work within multidisciplinary groups of investigators.

Mentoring can help early-career investigators as they develop networks of peer investigators, invest in multidisciplinary research projects, and navigate through the different pathways for successful career development.<sup>3–6</sup> Mentoring, along with appropriate training, is necessary to prepare investigators to conduct research that will address health disparities and focus on HIV-associated morbidity and mortality, and will be especially important for early-career investigators.<sup>7–13</sup> Mentoring is often the difference between success and failure as early-career investigators develop skills and establish the networks of collaborations that span different disciplines.<sup>14</sup>

Mentoring is often recognized to be a key factor for work satisfaction, productivity, and retention of investigators in a variety of

research settings.<sup>15–30</sup> Many successful senior investigators cite a particularly meaningful mentoring relationship that played an important role in their own personal success. In addition, mentoring is a crucial intervention for developing a diverse workplace and diversity among investigators.<sup>20,31–39</sup> Traditional mentoring, usually one-on-one mentoring between a supervisor and a trainee, historically has been relatively unorganized. The specific strategies and methodologies for providing mentoring are not well documented, and the outcomes of these experiences are largely dependent on lucky pairings of well-suited mentors and mentees. Organized approaches testing various methods of mentoring will be required to study the beneficial outcomes associated with mentoring, in part because it is clear that multiple approaches are needed and investigators require different types of mentoring at different points in their careers.

The continued development and success of new HIV investigators is critical for maintaining scientific progress toward