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The Career Development Institute for Psychiatry: An Innovative, Longitudinal Program for Physician-Scientists

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Abstract

Objectives—The Research Career Development Institute for Psychiatry is a collaboration between the University of Pittsburgh and Stanford University to recruit and train a broad-based group of promising junior physicians by providing the necessary skills and support for successful research careers in academic psychiatry.

Methods—Participants whose interests span the spectrum of clinical and intervention research attend a multiday career development institute workshop and follow-up annual booster sessions conducted with the American College of Neuropsychopharmacology. The program identifies and trains 20 new physician-researchers each year, with particular emphasis on women, minorities, and those from less research-intensive psychiatry departments, and provides booster sessions for all trainees. An annual evaluation is used to renew and update the content of the institutes and to measure the long-term value in research and career success.

Results—This report is based on the results of 77 participants from the first four Career Development Institute classes. Qualitative assessment of the program content and process led to improvements in each successive year's workshop. Preliminary quantitative follow-up assessment of participants indicated successful career progress toward individual objectives.

Conclusion—By providing early career investigators with skills to cope with local and national forces in academic medical centers, the Career Development Institute is significantly contributing to the development of the next generation of leading academic clinical researchers in mental health and can serve as a model for other biomedical research arenas.

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The past two decades have witnessed a crisis in clinical research, as evidenced by the dwindling number of physician-scientists nationally (1), particularly for mental health, where fewer physicians pursue clinical research careers and the dropout rate is high among those who do. Conferences in 2003 and 2005 by the National Institutes of Health (NIH) and the National Psychiatry Training Council (NPTC) (2,3) reviewed reasons for this decline, one of which is lack of support for physician-scientists during the transition from fellow to independent investigator (4,5).

In December 2002, an American College of Neuropsychopharmacology (ACNP) conference workshop on career development addressed the challenges of training the next generation of physician-scientists and identified the necessary next steps: to recruit early in medical school, provide mentored research advice on using time and implementing strategic career development timetables leading to peer-reviewed publications, ensure psychological support at critical transition points, and maximize the use of new NIH loan forgiveness programs.

A review of the literature (6–17), examination of similar training programs (e.g., the Summer Research Institute in Geriatric Psychiatry) (18,19), and our own experience to date underscore the importance of critical time periods and, particularly, the transition from residency or postdoctoral training to faculty status. Although some psychiatry departments contain the necessary infrastructure for research training, the vast majority do not. Thus, we need to develop strategies to entice junior people to enter research careers and provide opportunities, strategies, and tactics to help them and their home institutions nurture their research careers. We believe that a key transition point is related to the initial faculty years. Many junior faculty members never apply for a career development award. Many of those who apply but are not successful on their first submission do not resubmit. Although infrastructure mechanisms in individual departments and universities can be developed, how can we best help junior investigators sustain a commitment to an academic research career, and how can we expand their exposure to effective strategies, models, and mentors that are the keys to successful academic research careers?

Methods

The Research Career Development Institute for Psychiatry (CDI) was designed to provide skills and support for successful research careers in academic psychiatry. Through a collaboration between the University of Pittsburgh and Stanford University, we have conducted a series of annual research career development institutes with a broad-based group of promising junior physicians whose interests span the spectrum of clinical and intervention research. The program entails a multiday career development institute workshop, follow-up booster sessions, and annual assessment of the long-term value in research and career success.

The CDI is designed to improve and augment participants' repertoire of academic research "survival skills," providing continuing support in their transition to independent investigation, fostering shared learning experiences with other investigators at similar developmental stages, and establishing a network of junior investigators and senior mentors across the United States. The CDI emphasizes NIH career development (K series) award as a key vehicle for successful progression to independent clinical investigator, which is consistent with the recommendation of NIH Director's Panel on Clinical Research (5). A K award validates for the candidate, professional colleagues, and the funding agency that the recipient has made a significant commitment to life as a clinical researcher. In pragmatic terms, the current funding structure for initial K awards from the National Institute of Mental Health (NIMH) (i.e., 100% salary support up to a maximum of \$90,000 and an annual research budget of \$50,000 for 5 years) makes K awards more "secure" than an R01, in which levels of salary support are typically lower and an initial award is likely to be of shorter duration. Further, by requiring at least a

75% time commitment per year, the K award allows junior investigators to have the necessary protected time to develop their own research programs.

We annually recruit a new cohort of approximately 20 participants. Applicants to the program should have an M.D. and/or Ph.D. degree, be in the final year of a residency or advanced postdoctoral position, or be at the junior faculty level for fewer than 5 years. Participants are chosen based on their academic accomplishments and commitment to a research career in psychiatry, as reflected in peer-reviewed publications, applications for research funding, personal statements, and endorsements from a mentor. Diversity on the basis of ethnicity, race, gender, scientific interests across the spectrum of clinical and intervention research, geographic location, and institutional affiliation are also considered. Although the primary focus is on psychiatrists, with an emphasis on women and minorities, we also recruit promising psychologists.

We post announcements in the communication media of major psychiatric organizations (e.g., APA), subspecialty organizations relevant to research training (e.g., T32 research training program directors, directors of neuroscience and intervention and services research centers, NIMH program staff, ACNP membership), and minority organizations (e.g., Association of Black Psychiatrists). Most applicants have heard about the CDI from colleagues and past participants.

The CDI faculty and staff, who participate in the 4-day workshop, booster sessions, and long-distance mentoring, consist of experts in various fields of psychiatry at the University of Pittsburgh and Stanford University and reflect the diversity for which we are aiming in the composition of participants. Faculty members are selected based on their recognition as outstanding mental health scientists in psychiatric subspecialties, neuroscience, and relevant disciplines; track record of successful mentoring; and being excellent role models.

The program commences with a 4-day workshop (agenda available from the authors on request), which alternates each year between the Northeast (University of Pittsburgh) and the West Coast (Stanford University), with key faculty from both departments participating. The didactic curriculum focuses on the skill sets necessary for interdisciplinary research, emphasizing current priorities related to translational research. Training in research ethics and responsible conduct of research is integrated into all aspects of the program. In addition to the core didactics, time is devoted to oral platform presentations with feedback from faculty, in which participants each give a 10–15 minute summary of their current research to small groups of faculty and fellow participants. The program also includes a mock grant review session, for which four to five participants submit a grant proposal ahead of time for review. The fourth day is devoted to research methodology and content lectures on cutting-edge research questions in translational research. Topics vary year to year and have included mediator/moderator analysis and clinical significance.

Before the workshop, we identify potential mentors for each participant from among the CDI faculty. We base the pairings on the participant's input, career stage, research interests, and short- and long-term career goals. One-on-one consultations are then held throughout the 4-day workshop to focus on developing goals, reviewing the participant's existing mentoring network, and identifying other potential long-distance expertise. Between the two host universities, approximately 200 full-time research faculty, from junior to senior to emeritus representing all psychiatric specialties, provide a very large pool of psychiatric researchers available to train, teach, coach, and mentor, and any of them potentially could become long-distance mentors.

To help maintain long-term mentoring relationships, we provide all CDI participants and faculty access to a web site that serves as the central communication vehicle to provide up-to-

date administrative information, downloadable CDI course documents, and seminars on career development. The web site provides a secure virtual meeting place for live presentations, lectures, and discussions. The proceedings are posted in three formats: videotaped presentation, slides, and text transcription. In addition, over 25 CDI faculty members have been interviewed for 30 minutes each, from which we glean 2–3 minute snippets of wisdom on their key recommendations for developing and sustaining an academic research career.

We sustain the momentum of the initial CDI workshop with booster sessions attended by CDI alumni, key CDI faculty from the University of Pittsburgh and Stanford University, and NIMH program staff. Booster sessions are held annually in conjunction with ACNP meetings, with agreement of the ACNP Council. The ACNP meeting was chosen for the venue because the small size of the meeting directed specifically toward translational research facilitates networking and one-to-one consultation with a diverse group of mental health researchers, key CDI faculty, and NIMH staff. Although ACNP does not focus specifically on psychosocial, epidemiological, or health services research, all aspects of mental health research are represented by the ACNP membership and among the presentations. Given the interdisciplinary and translational nature of current mental health research, the meeting ensures that CDI participants are exposed to the most recent work in the basic neurosciences, which is important even for those whose research focus is on other areas of mental health research. In addition, that year's CDI graduates are invited to attend the ACNP program as traveling fellows and to attend the ACNP meeting as well as special activities designed just for them. The goals of the annual booster session are to provide additional consultation and assistance to CDI participants in writing career development award applications (or other types of competitive applications), to give CDI participants an opportunity to deliver oral progress reports of their research and career development activities, to strengthen the networks of "distance" mentoring and peer support, and to participate in discussions of career development strategies. In addition, we hold informal sessions with CDI alumni at the New Clinical Drug Evaluation Unit (NCDEU), APA, and other professional meetings to maintain face-to-face interactions and reinforce the mentoring relationships with CDI faculty.

The goals of the evaluation plan are both process- and outcome-oriented. Process evaluation, the results of which are reported here, occurs at the conclusion of each CDI workshop, when participants complete a self-report questionnaire assessing their satisfaction and recommendations for revisions to the didactic content, structure, and strategies of the workshop and provide open feedback in a group discussion.

Our outcome evaluation is designed to determine whether CDI alumni successfully launch and maintain their research careers in psychiatry. Prior to participation in the CDI and annually thereafter, we collect information about participants' backgrounds and experiences through a self-report questionnaire and curriculum vitae to assess current academic appointments in university departments of psychiatry, portion of time devoted to research and career development, applications for research funding, research awards, number and venue of peer-reviewed publications, and honors, awards, and other recognition for research achievement. At the end of the project's funding period (2010), we will have amassed up to 6 years' worth of follow-up data, beginning with the participants of the 2004 CDI. Therefore, these results are not presented here.

We completed a qualitative analysis aimed at identifying important themes or recommendations from CDI participants to facilitate our understanding of aspects of the program that may be most useful or in need of modification. This information is employed to continually renew, update, and improve the overall curriculum and processes.

Results

We have now recruited and followed four Research Career Development Institute for Psychiatry (CDI) classes, alternating meeting venues between the University of Pittsburgh and Stanford University. The first two (2004 at the University of Pittsburgh and 2005 at Stanford University) consisted of a 2.5-day workshop and optional half-day methodology seminar. Based on our experience and participant response, we lengthened the subsequent two workshops (2006 and 2007) to 4 days.

Of the 212 individuals who applied for the four workshops, 42% were women (n=89) and 15% represented racial and ethnic minority groups (n=32). Of the 77 young investigators who were selected to attend, 50% were women (n=38), 17% represented racial and ethnic minority groups (n=13), 62% had M.D. degrees (n=48), 13% had M.D./Ph.D. degrees (n=10), 22% had Ph.D. degrees (n=17), and 3% had other degrees (n=2) (Table 1). Geographically, 48% represented universities in the eastern United States (n=37), 18% Midwestern universities (n=14), 18% southern (n=14), 13% western (n=10), and 3% Canadian (n=2).

It is too early to assess definitive outcomes. We obtained preliminary data in September, 2007, on the 2004–2006 classes (the 2007 class had just completed the CDI at the time of writing and hence were not included) that indicate a significant majority of our CDI alumni have gone on to academic research appointments or remained in a research career track. Twenty individuals assumed positions at other institutions. Since attending the CDI workshop (from 1–3 years), 23 CDI alumni were appointed assistant professor, six were appointed instructor, and seven went on to research fellowships (one at NIMH). The 11 individuals who were already assistant professors at the time of the CDI workshop were still in these appointments. One participant whose focus was bioethical issues became a vice chair on a university institutional review board. Sixty-seven percent of the CDI alumni (n=38) continued to keep in contact with their CDI peers and 46% (n=26) with CDI faculty. Almost all (94%, n=53) have had success in finding good mentors; most of these mentors (72%, n=40) are local (as opposed to long distance). Sixty-seven percent of CDI alumni (n=38) are mentoring other individuals interested in research careers. The average time devoted to research was 75%, while protected research time by their respective institutions was 67%. To date, the 77 participants from the 2004–2007 classes have received 27 NIH awards (of which 11 were research career development “K” awards) and 22 NARSAD Young Investigator Awards.

We have conducted four booster sessions at ACNP, for the 2004–2007 classes. Eighty-five percent of CDI alumni have attended. Key recommendations of CDI faculty included the demonstration of some type of academic productivity; use of collaborative pathways; use of the CDI infrastructure for advice, possible review of proposals, and ongoing communications and resources; the possible need to assess realistically whether a change in institution may be necessary to attain goals; emphasizing interactions with NIH program officers prior to application submission; careful reading of program announcements; and the importance of having a well-thought-out research and training plan for K applications. Alumni had an opportunity to provide updates on their career activities since the spring CDI, highlighting both positive and negative developments. Recurring themes emerged from the discussions: challenges in the mentoring relationship (including loss of significant mentors, development of co-mentors outside the department, establishing meeting time with senior-level mentors, and building a dossier independent from one’s mentor when writing papers) and challenges associated with multiple professional roles (prioritizing roles within the department; balancing professional and personal lives; developing project management skills, including hiring and managing staff, managing a budget, and running a project day-to-day; and negotiating faculty positions with protection for research/academic time). Individual consultations were arranged between alumni and CDI faculty for feedback on grant applications, advice on resubmissions,

and practical strategies for managing research projects. The impact of these modifications will be assessed in the next stage of the evaluation process.

Based on participant feedback, we moved the oral presentations to the afternoon of the first day to decrease participants' anxiety about their presentations. We also increased the time allocated for the mock NIH study section review of participant grant applications and for one-to-one mentorship consultations between participants and CDI faculty, allowing each participant to meet with at least three different faculty members from his or her areas of interest.

Discussion

Although individual departmental strategies and resources may be available for facilitating the career development of investigators at the early stages of an academic research career, the opportunities provided by the CDI for rapid acquisition and practice of survival skills will increase the likelihood of eventual success for the junior mental health scientists who participate. At the critical transition from trainee to junior faculty member, the availability of booster sessions with seasoned mentors, experienced teachers and researchers, and peers at similar points in their careers will increase the proportion of physicians reaching independent investigator status. The acquisition of key survival skills, coupled with a new level of networking, represents a significant increase in research infrastructure support "without walls" for our participants, and this is a major goal of our program. Learning how to cope with both local and national forces in academic medical centers represents an important challenge for junior investigators that we can help provide the skills to master.

It is too early in the program to conduct a definitive outcome analysis to assess its effectiveness in contributing to the successful launch of an academic career. The academic, research, and career data we are collecting will be compared with national figures of similar candidates who did not apply to attend the CDI. However, we recognize the potential for selection bias—individuals who are motivated to apply for the CDI may be more likely to succeed. Thus, we believe that a more appropriate comparison group would be those individuals who applied to attend the CDI in the same year, were eligible, but were not selected. Using the NIH CRISP database and data from NARSAD, preliminary data indicate that 12% of CDI participants (9 of 77) received NIH K awards, and 25% received NARSAD awards (19 of 77), while 6% of those who applied for the CDI but were not selected (8 of 135) received NIH K awards, and 9% received NARSAD awards (13 of 135), thus suggesting that participation in the CDI increases one's chances of obtaining these awards. We will also be able to compare nonparticipants with CDI participants using publication tracking systems such as PubMed and PsycINFO.

In addition, Drs. Kupfer and Schatzberg will contact the chairs of CDI participants' current departments to solicit their opinions about the impact of the CDI on the growth of individual participants and any contributions that participants have made to the research culture of their present work settings. We will assess whether any changes have developed in their departments to provide better mentorship opportunities, continued education, and grant writing experiences.

Evaluations of the success of CDI participants must be sensitive to the barriers to research careers encountered by members of underrepresented minority groups and women. We will investigate the extent to which these barriers are professional (e.g., a scarcity of minority and female mentors) or personal (e.g., decisions about where to live influenced by minority demographics, the timing of child-rearing, issues in negotiating the demands of two-career couples) by asking all participants to respond to a questionnaire on these topics, which will be administered at the ACNP booster sessions and in our annual longitudinal follow-up.

The Research Career Development Institute for Psychiatry (CDI) was developed in response to the necessity of encouraging physician-scientists and psychologists to pursue academic clinical research careers in mental health by providing those already exhibiting an interest in this career track with exposure to state-of-the-art strategies, role models, and mentors to enhance their success. Not all academic departments have the resources to provide junior faculty and investigators with these skills in a systematic way. Indeed, even when they do, such approaches are often limited by being purely didactic rather than interactive, representing the perspective of one department and one potential way of approaching an academic career, and failing to recognize the benefits of providing ongoing, individual mentorship. We believe that the CDI provides one programmatic approach tailored to presenting the best possible information on all aspects of career development from academic experts with a broad range of perspectives on career development and a combination of didactic and interactive approaches to maximize the learning experience. While the core materials provide essential information, the one-to-one feedback and counseling sessions provide participants with guidance to work through difficulties and problems across a wide array of topics, from methodological issues to fostering collaborations. By providing early career investigators with the necessary skills to cope with local and national forces in an academic medical center, the CDI is making a significant contribution to the development of the next generation of leading academic clinical researchers in mental health and can serve as a model program for other biomedical research arenas.

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TABLE 1

Participant Demographics

CDI Year	Number of Applicants	Number of Participants	Degrees				Gender		Minority	
			M.D.	Ph.D.	M.D./Ph.D.	Other	Male	Female	Underrepresented	Other
2004	48	20	16	3	1	0	13	7	1	0
2005	28	17	9	3	5	0	9	8	1	0
2006	57	19	13	4	2	0	9	10	5	4
2007	79	21	10	7	2	2	8	13	1	1
TOTAL	212	77	48	17	10	2	39	38	8	5

CDI=Research Career Development Institute for Psychiatry