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Peer-mentored Research Development Meeting: A model for successful peer mentoring among junior level researchers

Aimee K. Santucci, PhD*,

Center for Research on Health Care, Division of General Internal Medicine, University of Pittsburgh

Jennifer H. Lingler, PhD, FNP,

Department of Psychiatry, University of Pittsburgh

Karen L. Schmidt, PhD,

Department of Psychiatry, University of Pittsburgh

Beth A.D. Nolan, PhD,

Institute for Evaluation Science in Community Health, Graduate School of Public Health, University of Pittsburgh

Dawn L. Thatcher, PhD, and

Department of Psychiatry, University of Pittsburgh

Deborah E. Polk, PhD

Department of Dental Public Health and Information Management, University of Pittsburgh

Abstract

Objective—This report describes a model for the development, process and tracking methods of an interdisciplinary peer mentoring program, Peer-mentored Research Development Meeting (PRDM). PRDM was initiated in 2004 by a group of postdoctoral scholars and junior faculty from the Schools of the Health Sciences at the University of Pittsburgh.

Method—Case report. From February of 2004 through February of 2006, PRDM's first 5 members tracked and documented their research activity (e.g., manuscripts, grants) every 4 months. The defining features of PRDM are: 1) adherence to a structured frequency and format for meetings, 2) systematic tracking and evaluation of research development activities, and 3) maintenance of ongoing relationships with senior mentors.

Results—During the 24-month data collection period, members were involved in 91 research development projects including grant applications, journal article manuscripts, book chapters and conference abstracts. Members' productivity increased during the 24-month period, as did the efficiency and focus of the completed projects.

Conclusions—Members increased the efficiency and focus of their research development activities during the study period. Structured peer-mentoring groups have potential to enhance research productivity among junior investigators in research intensive environments.

The need for well-trained clinical researchers has spurred multiple federally funded research training initiatives including F, T and K series grants as well as the new the NIH Pathway to Independence (PI) Award (K99/R00; PA-07-297). While such initiatives are likely to increase the pool of potential NIH grantees, it is unclear whether these investments will yield sustained funding and programmatic research careers in the next generation of health scientists. Projected

*corresponding author: Aimee K. Santucci, PhD, Center for Research on Healthcare, Division of General Internal Medicine, University of Pittsburgh, 230 McKee Place, Suite 600, Pittsburgh, PA 15213, Phone: 412-692-2029, Fax: 412-692-4838, santucciak@upmc.edu.

shortages in medicine and nursing portend a paucity of clinically prepared researchers, while factors such as funding freezes, leveling of faculty salaries (1), and loss of faculty candidates to industry threaten the overall supply of academic researchers (2,3). If junior faculty is to achieve success in a research intensive academic environment, multiple levels of support are needed. This paper describes the development of a peer-mentoring initiative to foster the professional development of junior-level clinical researchers. The aim of this manuscript is to describe an exemplar approach to peer mentoring that can be easily implemented among junior level research scientists in an academic psychiatry department.

Mentoring has been broadly defined as a voluntary alliance between an experienced senior professional and a less advanced one, for the dual purposes of career development and enhancement of the profession (4). The practice and importance of formal mentorship—the pairing of junior faculty with established mentors—is widely recognized in academic research (5,6). However, traditional mentoring relationships may be threatened by a multitude of factors including the demanding nature of mentor schedules (7) and a lack of interpersonal chemistry (8). Peer-mentoring represents a means of augmenting junior-senior mentoring activities.

Although there is anecdotal evidence that peers serve a critical role in the maintenance of career productivity (9,10), there are few empirical studies which examine the efficacy of peer mentoring. A handful of qualitative and quantitative studies document the success of peer mentoring (11,12,13). Pololi and colleagues (13) report on an 80-hour, structured Collaborative Mentoring Program and describe outcomes such as values identification, career planning, development of collaborative relationships, and skills necessary for research productivity (scholarly writing and negotiation). In another report, faculty facilitators describe increased productivity among participants as measured by new projects and submissions of abstracts and journal manuscripts (12). In neither case, however, was peer mentoring designed or implemented by junior faculty as was done in our described peer mentoring approach. No studies to our knowledge have addressed both the process and outcomes of a peer mentoring group focusing on research development of junior faculty.

Recognizing the need to ensure successful transition into their roles as junior faculty researchers, the authors of the current report have developed and implemented a novel approach to enhancing junior investigator productivity in a competitive research environment, with specific relevance to those engaged in psychiatry research. Peer-mentored Research Development Meeting (PRDM) is a weekly research development group dedicated to increasing the research and writing productivity of five junior faculty and postdoctoral fellows in the health sciences, the majority of whom were associated with the Department of Psychiatry at the University of Pittsburgh. The purpose of this case report is to describe the process and data from the first 24 months of the initiative.

The authors propose an example of peer mentoring for research development that can be readily implemented by graduate and medical students, post-doctoral fellows, and junior faculty at research-intensive medical institutions, as a complement to traditional senior mentoring relationships. This particular model includes active participation in weekly meetings, oral and written feedback of materials presented by group peers, and systematic tracking of all projects initiated by group members. Objective data related to productivity are reported; these data were recorded at several time points since the inception of the group. Emergent properties of the group process are also discussed.

Methods

Participants

Participants were initially three postdoctoral fellows and one junior faculty member at the University of Pittsburgh. Within six months, another junior faculty member joined. All participants held Ph.D.s. Members represented a range of basic and applied research interests within the health sciences.

Formation of PRDM

Discussions about scholarly writing and the need for peer review and mentoring in this area led to a call for participants among the postdoctoral trainees and junior faculty in the Department of Psychiatry, via flyer and a notice to a listserv of post-doctoral trainees and junior faculty. Criteria for recruitment included postdoctoral or junior faculty status, adherence to the peer mentoring model, and willingness to participate on a weekly basis. No restrictions for group inclusion were made based on gender, ethnicity, research area of interest, or type of advanced degree (PhD, MD, or MD/PhD). The group was held to five members because preliminary stages of the group process indicated that this size worked well to strike a balance with respect to presenting material for review and volume of feedback received. For example, incorporating more than 4 or 5 reviews in a manuscript at one time is difficult to manage. On the other hand, if the group was limited to 3, for example, one would receive only 2 additional perspectives on their work. Procedures and weekly scheduling of the group were devised to allow frequent opportunities for peer meetings, mentoring, and review of manuscripts and grants. Members felt that weekly meetings would best develop intensive peer mentoring relationships and allow each member to present their own material every five weeks.

The PRDM Model

PRDM Research Development Topics—Topics discussed in the initial two years of the meeting included: 1. Research project design (e.g., generating specific aims and hypotheses, brainstorming research designs and procedures); 2. Research writing (e.g., review of drafts of grant proposals, manuscripts, and conference abstracts); and 3. Research strategy (e.g., opportunities for traditional mentoring, specific research challenges).

Structure of Weekly Meetings—The setting changed weekly as meetings were held in conference rooms in the immediate vicinity each member's office. The member whose work was reviewed that week hosted the meeting. Attendance was typically four or five members per meeting during the study period, although attendance was not typically recorded. The hosting member distributed materials (e.g., manuscript, description of research challenge) at least one day in advance of the meeting. This relatively brief advance review time was judged to be sufficient for most members to provide feedback. Only work generated by members was reviewed; PRDM does not serve as a journal club or seminar series. Other members prepared written feedback on the materials.

Meetings were centered on exchange of feedback and ideas for next steps in the given project. Each member treated the product as if they were the primary reviewer and provided written and oral feedback. The host for the group began by briefly introducing the materials. Goals for the meeting and specific issues to resolve were identified. Manuscripts in progress were commonly reviewed at meetings; these varied from rough drafts to revised manuscripts for resubmission. PRDM members who had “big issue” comments initiated the feedback.

Feedback and discussion concluded with PRDM member consensus and on an action plan for moving the product forward. Solutions and action plans for the product occurred at multiple levels, from editorial to conceptual. Because this was a group of peers, this format allows for

debate among the members and did not result in any one member taking the lead. Comments were generally titrated to the level of the product presented. For example, editorial comments were often not discussed in products with major conceptual problems.

Productivity Data Collection—PRDM members recorded data on the progress of projects. For each project, the following variables are recorded:

1. Type of project: grant, journal article, conference abstract or presentation, book chapter, book, or other.
2. Authorship: first or other author of the project.
3. Progress: a. In preparation, b. Final draft, c. Submitted, d. Revise and Resubmit, e. Awarded, In Press, or Presented, f. Discontinued – PRDM members were interested in tracking both successful projects and discontinued efforts; when a project was ended with anything other than a publication, presentation, or awarded grant, it was recorded in this category.

Once a project was conceptualized, the member added the project to the group list, assigned a sequential number to the project, and indicated type of project and authorship. On subsequent progress meetings, the member updated the project with the new progress status.

Results

This paper reports on the first 24 months of research activity among PRDM members. Data on progress was collected on average every 4 months, for a total of 6 time points. Statistics described were from the period after the fifth member had joined. The majority of projects were manuscripts (61%). Other projects included grants (24%), presentations (13%) and other (e.g., books and job talks; 2%). Ninety-one projects are included in this analysis. Number of individual projects ranged from 15 to 19. Forty-one (40.5%) had been initiated prior to PRDM, while the remaining 60 (59.5%) were initiated during the data collection period.

Three unique outcome variables were developed for tracking individual and group data:

- Research Productivity was defined as the number of projects (including grant applications, journal article manuscripts, book chapters and conference abstracts) reaching either submitted, awarded, in press, or presented status in a given period of time. Research Productivity was a way to evaluate productivity of members in a traditional and academic sense.
- Research Efficiency was defined as the ratio of submitted projects to total projects that had been initiated. Research Efficiency was a way to evaluate the proportion of projects reaching a completion point.
- Research Focus was defined as the ratio of active projects to total projects initiated and as the ratio of discontinued projects to total projects that had been initiated, both expressed as a percentage. Research focus was a way to evaluate the process of discontinuing some projects to focus on potentially more fruitful ones.

Research Productivity

Figure 1 shows Research Productivity. The total number of projects submitted or finished increased steadily over the two years. At the initial data collection, six projects were classified as “recently submitted” or “finished.” At the final data collection, 27 projects were classified as “recently submitted” or “finished.” A mean of 4.5 projects per member reached submission or completion during the entire period of data collection (Range: 1-10).

Research Efficiency

Figure 2 shows Research Efficiency over time. The efficiency ratio increased steadily over the first year of PRDM, after which it remained stable. At the initial data collection 14.6% of the total projects initiated were classified as “submitted” or “finished.” This proportion increased to 33.3% by the fourth data collection. This finding reflected an initial burst of relative speed and efficiency with which projects were being completed during the initial year.

Research Focus

Figure 2 also shows Research Focus. Ratio of active projects to total initiated decreased, while ratio of discontinued projects to total initiated increased over time. At the initial data collection 93.8% of the total projects initiated were classified as active, while none had been discontinued. At the fourth data collection these ratios reached asymptotes, with the proportion of active projects leveling out at approximately 45% and the proportion of discontinued projects reaching approximately 20%. At the final data collection 48.3% of total projects initiated were classified as active, and 19.0% had been discontinued. This combination reflected members' increasing focus on the most potentially rewarding and useful projects.

Conclusions

Several features distinguish the PRDM model from other peer focused models in the extant mentoring literature. Specifically, the PRDM model was designed to supplement traditional mentoring activities and to establish a formal system for tracking the progress of research related activities among members.

Complementing Existing Mentoring

Members explicitly structured group membership, meeting frequency, scope of research development activities, and the tracking system to complement already-existing and ongoing senior mentoring relationships. Each member maintained existing junior-senior mentoring relationships throughout the evaluation period. All five members had a one on one relationship with a primary senior mentor. All members had at least weekly contact with their senior mentors throughout the evaluation period. The PRDM experience shows that regular contact (1 time per week) is particularly useful to junior faculty who work with a preeminent investigator who cannot provide frequent feedback. In our experience the incidental size of four (later, five) members provided an ideal size beyond which the burden of research review would have exceeded the benefits of work reviewed.

Systematic Tracking of Research Productivity, Efficiency, and Focus

In traditional mentoring models, participants typically define and track their activities on their own and provide reports of completed activities to their supervisors and advisors. The authors of the current report recognized the need for a broad definition of research activity which includes both completed and incomplete or even discontinued projects. The concept of research success was refined by considering the distinct dimensions of research productivity, efficiency, and focus. Over time, members maintained both steady productivity and steady research efficiency (Figure 1), defined as the proportion of completed to total projects initiated. This illustrates a marked narrowing of focus in the group's work. There are several benefits to this richer definition of research activity. First, through peer discussion, members were able to select projects on which to concentrate their efforts. This is especially important for junior scientists in the early stages of establishing a program of research. Further, because deciding to discontinue a line of research may be a new task for a junior researcher, peer support in this process can be beneficial to a junior scientist in allowing the examination of less productive lines of inquiry after effort has been expended.

Limitations

It is important to note that exclusive use of the PRDM model in the absence of traditional mentoring is limiting, because peer mentors have fewer professional experiences. Participation in PRDM complements traditional mentoring; it cannot replace sound advice and guidance from experienced senior investigators who play a critical role in the future success of trainees (14).

As with any case study, the present report lacks a control group. Thus, the active ingredients of the model cannot be determined. Possible active ingredients could include support, accountability, observation effect, and natural progression. Studies employing stronger designs may be of further benefit in examination of mentoring. Future studies should also evaluate the extent to which pragmatic factors (e.g., institutional support and release time for mentoring activities) and group composition (e.g., membership size, gender, ethnicity, research area) influence the success of peer-mentoring interventions.

Summary

Peer-mentoring groups such as PRDM can be easily implemented and serve as a means for a researcher to track productivity, requiring only a commitment to the group model and an adherence to regular meetings. While peer-mentoring should not supplant traditional mentoring, we propose that peer-mentoring may serve an important complementary role in the development of a junior faculty member's research career. To our knowledge, this is the first manuscript to report on implementation and systematic tracking of a peer mentoring model. We propose that this model can be readily executed by junior faculty and provide a means for increased research productivity among junior faculty members.

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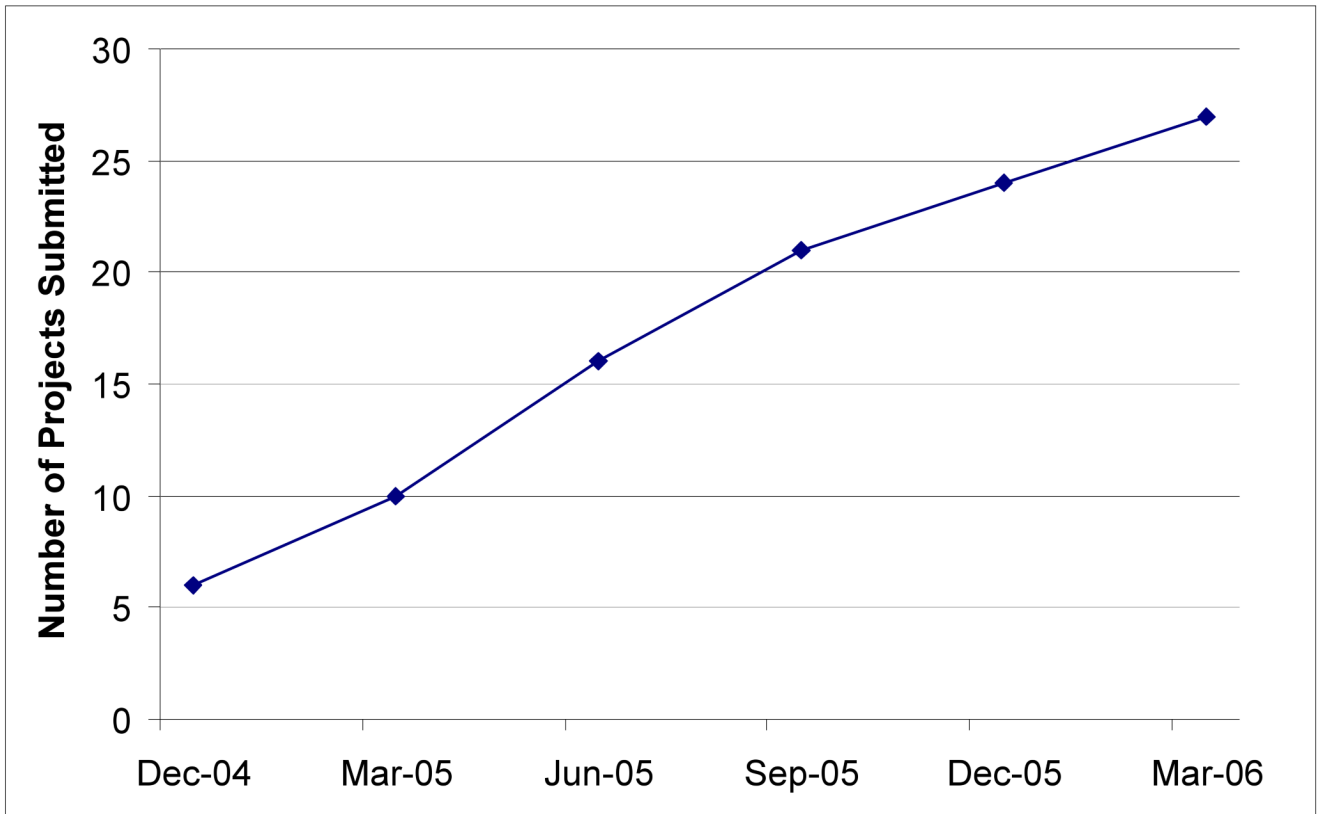


Figure 1.
Projects submitted over time by PRDM members

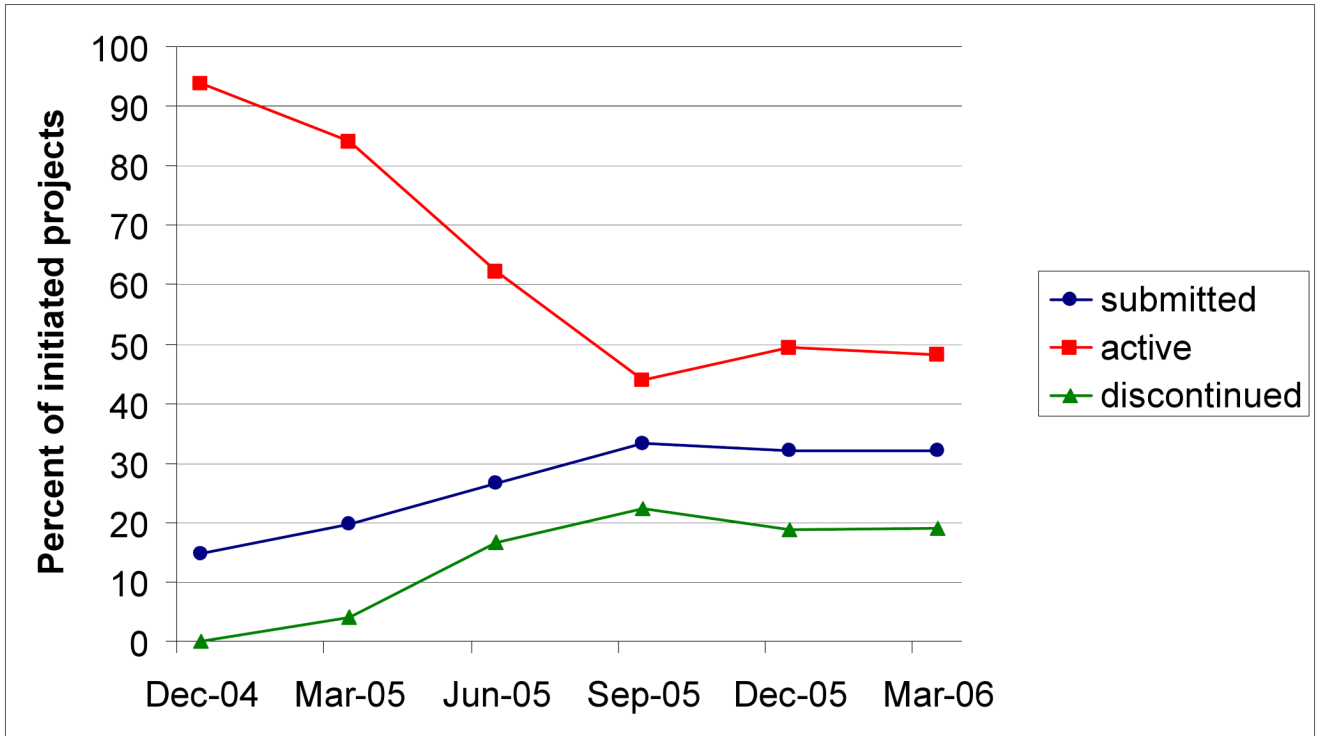


Figure 2.
PRDM Research efficiency and focus over time