The Business of Research: Budgets, Personnel, Planning, and Pitfalls—a Report from the American Society of Preventive Oncology’s Junior Members Interest Group

Brian L. Sprague1, Cheryl L. Thompson2, Patricia A. Ganz3, Peter A. Kanetsky4, Lawrence H. Kushi5, and Linda Nebeling6

The Junior Members Interest Group of the American Society of Preventive Oncology (ASPO) was initiated in 1999 to engage and integrate predoctoral, postdoctoral, and junior faculty members into the society and prepare them for careers in cancer prevention and control research (1). Members of the Junior Member Interest Group sit on the ASPO Executive Committee and the Program Planning Committee. Junior members also organize professional development sessions at each ASPO annual meeting.

In response to member demand, the 2011 ASPO meeting featured a Junior Members Career Panel Session, entitled “The Business of Research: Budgets, Personnel, Planning, and Pitfalls.” Most beginning investigators have very little preparation in project management skills, which are requisites for success once grant funding is secured. Substantial challenges include managing personnel, developing and implementing a budget, and dealing with unforeseen delays in research. These skills are often not learned while in graduate school.

Although justice to this topic cannot be done in a single 1 hour and 45 minute session, to address major questions and give important insight into these topics, the Junior Members Interest Group invited 4 experienced investigators to share their advice. The panel included Patricia Ganz (Professor of Health Services, UCLA), Peter Kanetsky (Associate Professor of Epidemiology, University of Pennsylvania), Lawrence Kushi (Associate Director for Etiology and Prevention Research, Kaiser Permanente), and Linda Nebeling (Chief of the Health Promotion Research Branch, National Cancer Institute). This report summarizes the key discussion points that were raised during the session, for dissemination to all junior cancer prevention and control researchers.

On the Job Training

The career panel emphasized that many of the skills necessary for project management are not part of scientific training. Success in obtaining a doctoral degree is typically unrelated to an ability to manage staff or finances. The reality is that new investigators usually receive only “on the job” training. This realization is an important first step in developing the new skills that will be needed. Developing a research program requires the Principal Investigator to act, in part, as a small business manager. New investigators should seek out opportunities such as professional development courses in project management, that will help grow the “business” skills needed to run a successful research program. Existing mentors with experience in this area also can provide valuable advice. Notably, it may be important to identify additional mentors who can provide guidance on local processes that are institution specific. Finally, it is essential to meet frequently with key administrative staff, such as departmental financial managers, who provide critical support to research activities. A close working relationship with support staff will facilitate a clear understanding of grant-related administrative processes.

Budgeting

One of the novel challenges that junior investigators face when writing their first grants is preparing a budget. An appropriate budget and budget justification are key pieces of the grant application that will be evaluated by peer reviewers. These sections allow the Principal Investigator to impress the reviewers regarding the investigator’s preparedness for conducting the proposed work. New investigators tend to be idealistic in both their proposal aims and budget. It is essential that the proposal be realistic in terms of what can actually be accomplished. Collection of preliminary data can be very helpful in informing study budgeting, and they can also provide compelling evidence to the reviewers of the investigator’s familiarity with the costs of the proposed research. It can be advantageous to ask colleagues for a budget template.

Authors’ Affiliations: 1Department of Surgery, University of Vermont, Burlington, Vermont; 2Department of Family Medicine, Case Western Reserve University, Cleveland, Ohio; 3Department of Health Services, University of California, Los Angeles, California; 4Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania; 5Division of Research, Kaiser Permanente Northern California, Oakland, California; and 6Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, Maryland

Corresponding Author: Brian L. Sprague, Office of Health Promotion Research, 1 S Prospect St., Rm 4428B, Burlington, Vermont 05401. Phone: 802-656-4112; Fax: 802-656-8826; E-mail: bsprague@uvm.edu.
or budget pages from a successful grant application that used a similar study design. A checklist of common expenses also can be of use during each budget preparation to ensure that frequently used items are not omitted.

In the current funding climate, budget cuts are the norm and should be expected. It is vital to regard the grant application as a proposal for the ideal study to accomplish certain aims. In the likely scenario in which a proposed budget is cut during programmatic review, the investigator needs to be engaged in the process. The Principal Investigator must identify those tasks that must be completed to accomplish the proposal aims. If the original aims cannot be accomplished at the awarded funding level, the investigator must determine what can still be achieved within the revised budget amount, and how the aims need to be revised. It can be helpful to adopt a modular framework in thinking about a grant proposal. Rather than an “all or nothing” approach, components of the study should be identified that could be dropped with each additional 5% cut. At this stage, the investigator needs to work closely with the funding agency to ensure that any revisions to the aims are acceptable. Plans for revision should be discussed with the program officer, whose feedback must be heeded. Finally, the investigator should ensure that subsequent progress reports are based on the revised scope of the proposal.

Once funded, the investigator needs to keep track of expenditures made against the grant. Official financial reports can often be challenging to interpret. Depending on the institution, they also may not be reported to the Principal Investigator for several weeks after funds have been expended. Departmental financial managers or other administrative staff can provide assistance in deciphering these reports. Alternatively, an investigator may consider creating additional strategies for tracking expenses that are kept current and easily interpretable. The investigator should always have a good understanding of what items have already incurred costs, how much those costs have amounted to, and how much of the budget remains to be spent.

**Managing Staff**

One of the most prominent challenges for new investigators is hiring and managing personnel. The first question is often deciding on which positions need to be budgeted for in grant applications. The proposed science should guide the number and types of positions. In grant applications in particular, it is essential that the budget reflect the tasks required to carry out the proposed aims. Reviewers will examine the budget justification closely for evidence of this.

After the positions to fill have been identified, the job descriptions should be carefully constructed. In general, it is advisable to keep them broad in scope rather than specifying a limited number of duties or projects. It often is advantageous to hire someone who not only can accomplish what needs to be done for a particular project but also will be able and interested in continuing to work on a variety of projects as the research program evolves. The job description should emphasize that the applicant will be joining a research team and will be expected to contribute in a variety of ways. It also is important to identify applicants who are good team players in addition to being a good individual worker. The ideal employee will not only carry out their responsibilities well but also will help other staff members be more productive.

Commonly, internal candidates for advertised positions may arise via referrals from colleagues. There are advantages and disadvantages in this situation. Getting a good reference from a trusted colleague can be invaluable; in addition, an internal candidate may require less initial investment of investigator time as they already will be familiar with the institution and the general working environment. However, internal candidates may come with entrenched attitudes or practices that are not easily modified. A new external candidate may offer a fresh perspective and more readily adopt the investigator’s training and scientific viewpoint.

While it can be frustrating to hire staff who move on within a couple of years, the panel commented on the value of hiring graduate students or recent graduates as research assistants. In fact, it can be a strong asset to gain the reputation as a research group that promotes the development of aspiring scientists. This will attract talented candidates who are dedicated to careers in science and who are motivated to be productive. Regardless of who is hired, it is essential for investigators to get to know their employees and understand what motivates them. What are they seeking from this position? What excites them about the research? How can the investigator aid them in their career development? Ongoing communication is essential to keep staff productive. The investigator should make sure to find out if any of their employees feel overburdened with too much work, or whether they are bored by limited responsibilities. Ideally, the goals of the staff should align with the goals of the Principal Investigator to the greatest extent possible. Regardless of their role in the research, employees should be engaged with the science and cognizant of how the research program contributes to cancer prevention and control.

Learning how to delegate is an important skill. As a general rule, if a staff member can do something as well as the investigator, then the task should probably be delegated so that the investigator can focus on the activities that require his or her expertise. While it often feels like a large expenditure of time and energy is required to train a research assistant, the investment often pays off within a year.

**Maintaining Funding**

The current funding climate presents numerous challenges to investigators. Junior faculty often struggle with finding the right balance in the number of grants in which...
to be involved and how to allocate their effort toward multiple projects of interest. The panel suggested that it may be advantageous for early investigators to focus a larger effort on fewer grants. With relatively less experience in the research field, each project likely requires substantial "ramp-up" time and effort beyond the official percent effort on the grant. In addition, each grant carries substantial administrative burdens. If effort is split into small portions dedicated to many grants, this burden can interfere with an ability to dedicate time to the science.

The panel also acknowledged, however, the collaborative nature of cancer prevention and control research. It is generally advantageous for new investigators to establish a reputation as productive collaborators who are pleasant to work with, particularly within their own institution. In addition, collaboration on colleagues' grants can provide some cushion for times when an investigator's own grants are not successful. It can be particularly advantageous to identify collaborations that overlap in terms of topic matter, study population, or staff personnel. These will reduce "start-up" costs in terms of familiarizing with new literature and study data and also may provide an avenue to keep staff on board when there are funding lapses in individual projects.

Finally, the panel emphasized the importance of diversifying funding sources. For example, non-NIH funding sources can be leveraged when NIH funding is particularly tight. Investigators need to stay cognizant of the continual challenge of maintaining funding when hiring new staff. It is important to think about whether each hire is absolutely necessary and what it will take to keep that position funded.

Dealing with Adversity

New investigators often consider a funded grant to be a rigid mandate describing the tasks needed to be accomplished. The panel emphasized that a grant is in fact a dynamic road map and not set in stone. During the course of research, it is common to encounter challenges that force reconsideration of the study methods or even the aims. These could be the result of technical difficulties in study procedures or due to the impact of external forces such as new research findings. Principal Investigators should recognize that the funding agency wants the project to be successful; the program officer should be regarded as a friend of the investigator in the research endeavor. The program officer will monitor progress on the grant and work with the investigator to achieve the best possible outcomes. It is essential that the investigator maintains good communication and is honest and forthcoming so that there are no surprises late in the grant period. If external forces substantially reduce the scientific value of the study aims, it is better to think carefully about reframing them rather than stubbornly adhering to the original aims. Also, it is occasionally necessary to adjust the scope of the project or modify the level of investigator effort to keep the project on budget. These issues require careful consideration and discussion with the program officer.

There are certain challenges that frequently arise for which junior investigators should be prepared. The time required for human subjects' approval is often underestimated. Careful planning is needed to ensure that project staffs are not hired for time periods during which project efforts are not allowed (e.g., prior to Institutional Review Board approval). Also, caution is required in choosing collaborators and relying on their timely completion of grant activities. The grant writing process can often be a good indicator of how well an investigator and collaborators will work together. The investigator should heed any warning signs regarding the engagement of collaborators in the project, and to the greatest extent possible, try to plan research activities such that study tasks can be conducted in parallel, rather than waiting on each other to complete certain tasks.

Conclusion

Upon finding an independent research position, new investigators must rapidly develop skills in budgeting, staff supervision, and other project management aspects. These abilities are not typically well developed in the course of scientific training. New investigators need to seek out opportunities to develop these skills, including courses, discussion with mentors, and career development sessions offered by scientific organizations. We also suggest that institutions and mentors actively work to facilitate the development of these skills in their less experienced faculty. The ASPO Junior Members Interest Group will continue to offer opportunities for junior investigators to engage with and learn from experienced investigators regarding these and other career development topics.

Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

Acknowledgment

We thank all the members of the ASPO Junior Members Interest Group, particularly Karen Kaiser, Yani Lu, Iman Martin, Hazel Nichols, Heather Tarleton, and Karen Werdl who helped organize this session, as well as Julie Kapp and Heidi Sahel who facilitated session planning.

Received June 21, 2011; accepted June 21, 2011; published OnlineFirst July 22, 2011.

Reference
