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Implementing the Research Budget

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Reworking a reduced budget after the award and monitoring and managing the budget once funds are received are critical to the success of a research project. Few resources are available to help principal investigators and research teams deal with these components of grant implementation. This article will address strategies and concerns related to the revision of the postaward budget and the implementation of the budget. Among the strategies discussed for the revision of the postaward budget are cost sharing, renegotiation with administration, and reallocation of funds. Also addressed are topics related to monitoring and managing the budget, including understanding budget guidelines, account management and documentation, tracking expenditures, and challenges in grant budget management.

Keywords: *research budgets; managing budgets; monitoring budgets*

Resources to assist researchers with implementing the science section of a research proposal are plentiful (Lusk, 2004; Ogden & Goldberg, 2002; Polit & Beck, 2004; Wood, 1996). Fewer resources are available, however, that discuss other elements of proposal implementation that can be critical to the success of a project, such as revising the postaward budget or monitoring and managing the budget. This article will address strategies and concerns related to the revision of the postaward budget and the implementation of the budget once funds have been received.

Budget Revisions After Notice of Award

Notice of an award for funding a research proposal is an exciting occurrence and one which affirms not only the science but also the time and effort that went into preparing the application. The time for celebration, however, may be very brief. In many cases, the award letter, particularly for NIH-funded grants, includes a notice that the initial funding request has been reduced and that the budget and budget justification must be revised and approved before any funds are released. As Ogden and Goldberg (2002) have noted, "Administrative budget cuts have been made in virtually all NIH-funded grants since 1988" (p. 56). Budget reductions of any amount will necessitate a reassessment of cost allocations and priorities. Even in situations when the budget is not reduced by the funding agency, awarded monies may not ultimately be adequate to fund the project as planned. Armed with knowledge of the potential for budget reductions or shortfalls, the principal investigator (PI) would be well advised to have considered areas in which adjustments can be made without compromising the research. Once budget reductions are mandated, the investigative team, and the principal investigator (PI) in particular, must regroup and carefully consider how allotted money can be allocated to ensure the successful implementation of the project. Although there are a number of options, some possible strategies for reducing the budget without jeopardizing the research are included in Table 1.

As the PI and research team consider how to rework the budget to compensate for reductions and/or shortfalls, it is important to consult with unit administrators (usually the associate dean for research and/or dean or director) in the process. Although negotiations with administration prior to submission of the grant and the original budget are assumed, changes in the unit or the postaward budget may dictate renegotiation. Even when there are no budget reductions, team members should discuss their workloads and amended needs for space, equipment, personnel, and other support with unit administration (department, school, or college) to determine whether existing resources in the budget are sufficient to accomplish the aims of the project. It will be helpful to approach any discussions with a carefully prepared and realistic proposal for what is needed from the unit housing the research.

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Table 1
Strategies for Reducing the Budget
When Budget Reductions Are Mandated

1.	Reduce PI and Co-Is faculty percentage effort.
2.	Reduce the number of hours for consultants, or reduce the number of consultations. Use e-mail or the telephone instead of in-person meetings to eliminate the costs of travel.
3.	Reduce the number of study sites.
4.	Reduce the number of data collection points in longitudinal studies.
5.	Reduce the number of variables.
6.	Reduce sample size by focusing power calculations on particular variables of central importance.
7.	Eliminate secondary aims.
8.	Reduce the amount of monies allocated for dissemination travel.
9.	Negotiate with administration to cost share salaries or fund items such as dissemination, travel, malpractice insurance, or automobile insurance.
10.	If possible, reconfigure personnel slots to hire part-time or lesser salaried individuals.

Note: Any changes that affect the study methods would need to have funding agency's approval.

During the renegotiation with administration, the PI and co-investigators (Co-Is) may also need to discuss cost sharing of their salaries not covered by the research budget or for an actual change in percentage of effort that will be covered. Cost sharing requires the unit to absorb some of the cost of conducting the research (usually in the form of salary supplementation), which may be problematic. Some units are better able to provide supplies, equipment, or services, such as a shared secretary or a data manager for several projects, thereby reducing the cost for an individual project. Negotiations will proceed much more smoothly if the administrator understands the needs of the project and the criteria the PI is using when asking for space, administrative support, cost sharing, and other requests. On completion of negotiations, a written agreement that outlines what was negotiated should be kept on file by both the PI and the administrator.

Monitoring and Managing the Budget

Understanding Budgeting Guidelines

Monies allotted for a grant include two major categories: direct costs (depending on the grant, these usually include personnel, consultation, subcontracts, supplies, equipment, travel, patient care, and other) and indirect costs (IC; the facilities and administrative cost rate that the funding agency sets or the one negotiated with the funding agency by each institution; Higdon & Topp, 2004). Direct costs are those monies that are required by the

project to conduct the research, whereas IC are those monies that fund the institution's research infrastructure (laboratories, accounting, human participants review, office space, telephones, computer connections, utilities, office supplies and office furniture, and administrative and grant support; Higdon & Topp, 2004) and are added to the cost of a project as a percentage of the direct costs. Items negotiated by the institution as part of the IC cannot typically be charged to an individual project (Higdon & Topp, 2004). In some institutions, a portion of the IC monies are returned to the unit and can be used to fund some direct cost items that were eliminated or reduced in the amended budget. In other institutions, additional costs, such as copying, malpractice insurance, and vehicle insurance, can also be covered by IC. The institution's project accountant has information about what was negotiated as part of the IC rate.

Once the budget has been finalized and approved by the funding agency and the funds are released, the PI should meet with all the individuals in the organization who will be involved with the budget, particularly the institutional accountant assigned to the project. In some institutions with smaller portfolios of research funding, the PI will work directly with institutional personnel rather than unit level personnel. In other situations, personnel from both the unit and the institution will work with postaward implementation and monitoring of budgets. In either scenario, during regular meetings with these individuals, the PI should become knowledgeable about codes for the various budget categories, items included in the negotiated IC, the process of procurement, the system for monitoring budgets, the process for moving money from one budget category to another, setting up accounts (e.g., petty cash), and the process of correcting errors. Although the actual implementation of these tasks is almost always the responsibility of a staff person in the unit, the PI must become familiar with the regulations guiding financial aspects of grants management, as the PI is ultimately accountable for the funds.

Institutional codes for various direct cost budget categories usually conform to the categories submitted in the proposal and include areas such as personnel, consultation, supplies, equipment, travel, patient care, and other. Not all these categories are included in budgets for various types of grants. The institution, however, will have an accounting system with codes that denote specific fiscal activity. To monitor the budget throughout the life of the grant, the PI must understand this accounting system.

Account Management and Documentation

One of the first activities after the funds have been received by the institution is setting up the account for dispersion of the funds. At this time, the project

is given an account number, and funds are allocated to the various categories as specified in the proposal. The percentage of effort for the PI and Co-Is (salary charged to the project) is also designated. Any changes to percentage of effort (from the original budget) and start date for each of the various Co-Is should be clarified at this time. Some Co-Is may not expend any effort at the start of a project (e.g., person overseeing laboratory assays on specimens) if recruitment and data collection do not begin immediately. The project, therefore, would not be charged for their effort. Quarterly effort reports are required for any federal funding and must reflect the actual amount of effort expended by any investigator. These are then reconciled by the institutional budget officer. Individual effort reports must be certified by the investigators so that any inaccuracies can be corrected.

Two issues arise if actual budgeted salaries are withdrawn in error. The first issue is salary that is withdrawn in error early in the project may be required for later needs when the project funding is over but the research is not finished. In this case, a no-cost extension is requested and monies not spent in the specified period of project funding are used; however, funds lost through inaccurate effort reporting are not available to fund the no-cost extension. The second issue is that effort reports would not be able to be reconciled between reported effort for that time period and the money that was withdrawn. It is much easier to start with correct start dates and percentage of effort than to rectify inaccuracies after the fact.

Tracking Expenditures

Once the account is set up and the account number assigned, expenditures can be charged to the account. At this time, the PI should initiate a system of tracking purchases, expenditures, and other charges to the project to make sure that expenses charged to the project account reflect actual purchases or charges from that project and not another. It is helpful if the tracking system is set up to reflect the accounting budget codes (capital equipment, salaries, travel, supplies, incentives, and other categories). For small projects, this tracking system may be maintained by the PI. For larger projects, it will likely be the responsibility of the project administrator (PA) or other staff hired for the project. On a monthly basis, the PI or the PI and the PA should review the budget activity as recorded in the tracking system against the monthly financial activity statement (FAS) provided by the institution. The monthly institutional FAS reflects funds that were encumbered as well as those transactions that were completed. The FAS also indicates, most importantly, the percentage of funds that have been expended for a particular category. This allows the PI to monitor the funding for any particular category

month by month, estimate the annual projected expenditures based on current spending, and move funds within the categories if necessary.

Maintaining a tracking system and monitoring financial activity on a monthly basis allows for the early detection and correction of errors. Although the primary intent of tracking and monitoring the budget is not to detect errors, errors can and do occur. It is much easier to correct the errors early, rather than after several months, especially if several errors have occurred. Correcting errors after the project funding has ended is usually not possible and may result in funds not being expended or not being available for no-cost extensions.

The PI and PA should meet with either the institutional accountant and/or the unit financial personnel to discuss errors and/or budget activity. This allows not only for discussion about needed corrections but also provides an opportunity for discussion about planned changes in the accounting system or budget. Although some changes in institutional accounting may be small and easily dealt with, other changes, such as converting to a paperless accounting system, can be major and very disruptive. Such changes may involve new procedures for procurement, paying vendors, or obtaining reports on fiscal activity on the project. The latter changes may make monitoring the budget difficult, at least for a period of time.

Challenges in Grant Budget Management

During the course of a project, there are often changes that affect the budget. Among these are new and unexpected institutional costs (e.g., insurance) that are charged to the project and could be problematic, especially if the amounts are large and the budget is tight. Fringe benefit rates often rise, and costs previously covered under IC negotiations may change; new technologies such as central scanning and data management services may improve efficiency but increase costs. The costs for maintenance agreements or medical malpractice insurance for grant personnel may also increase. If such costs would preclude conducting the research, the PI may need to negotiate further with administration. It is difficult to manage a budget if unanticipated charges are frequently assessed.

In addition to new and unanticipated institutional costs, planned project expenditures such as gasoline, land travel reimbursement, or laboratory supplies may increase. Using institutional vehicles rather than personal vehicles, renting commercial vehicles for project-related travel, or buying in bulk with other projects can be cost-saving alternatives.

Another challenge to keeping the budget balanced is the need for additional or different types of personnel, higher than expected salary increases,

or increases above those automatically included in the funding for each subsequent year (usually 3%). If additional or other types of personnel are needed, funds may be found by reconfiguring existing personnel slots or using funds earmarked for other activities, such as dissemination. When planning personnel costs in the initial proposal, it is helpful to use the upper end of a salary range. This then allows for flexibility within the budget when hiring. If the salary increases involve Co-Is not under the control of the unit administration, the percentage of effort may need to be decreased or funds reallocated within the budget to cover unanticipated increases. If salary increases for project staff exceed the annual increases allotted by the funding agency, funds must also be reallocated to cover this expenditure. This can be problematic if increases are large (because of promotions or change in positions). Personnel costs tend to be the biggest expenditure category in a multiyear budget so that finding funds within the rest of the budget to cover personnel costs can be difficult.

In summary, the fiscal management of a research grant is ultimately the responsibility of the PI. Rules and regulations in both the unit and the larger institution provide guidance; constant and continual monitoring of budget expenditures and planning is essential to prevent problems. Contextual changes related to personnel and new technologies during the life of the grant can affect smooth functioning. These changes often require renegotiation with administration to garner more resources and provide the PI with additional leverage. Careful assessment of anticipated needs and creative management of actual needs will enable the PI to successfully implement a research project and accomplish the original aims as planned.

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