Less Is Less: Less Is not More
Peer Review, Dollars, NIH, and Congress

To the Editor:

CRISIS!!!

Is this a time of crisis in nephrological research? The 12.5 percentile funding level (or whatever it is when you read this) for investigator-initiated grants (RO-1s) in the Kidney Disease area of the National Institute of Diabetes, Digestive and Kidney Diseases (NIDDK) certainly makes it appear to be a crisis to many investigators. The "negotiated reductions"—a euphemism for mandated cuts—in previously funded grants of 10% or 14% (or 25%, as recently occurred to me for a component of a Program Project Grant from NHLBI) makes it appear to be a crisis to laboratory technicians who are fired. But the real "crisis" is not for those of us with the good fortune to have been supported by NIH in the past. The real crisis is yet to come. Those few current house officers and fellows who are considering careers in academic nephrology do not like what they see! Who can blame them when they choose careers outside of nephrology or outside of academic medicine? What can we do?

More! Of course, the answer for all of these problems would be more funding. Indeed, the issue of more funding is of ultimate importance and it is a subject to which I shall return. But before discussing that most important of concerns, I will consider the impact of what we as participants in the NIH peer review process and recipients of NIH grants have done and are doing. I hasten to emphasize that our actions now and always have been based on the best of intentions. Nevertheless, it proves instructive to consider the ultimate consequences of our actions, especially now as research dollars in nephrology become increasingly more precious. As the funding level at NIH has dropped to the 30th percentile, to the 25th percentile, to the 17th percentile, etc., have we peer-reviewers and grant recipients served well the future of nephrology?

I shall consider four schemes in which we have participated, sometimes actively and openly, and at other times by unspoken inaction: "reducing the budget" of submitted applications, favoring smaller dollar awards for beginning investigators, acquiescing to "negotiated reductions" without a whimper, and "salary caps."

"BUDGETARY REDUCTIONS"

There is no excuse for a Study Section to approve funds in excess of those that are justly needed to conduct the science approved. But is this the only criterion we members of Study Sections have applied? Hasn't there been a target dollar amount on occasion? "We've got to get the budget down to $100,000," or "I'd have a lot more enthusiasm for that project at 100K instead of 125K" are refrains to which some Study Section members might relate. Is there any evidence that this ever impacted on renal research? I cannot prove my point, but I have a strong opinion that is based on my tour of duty as a member of the NIDDK Advisory Council (from January 5, 1987 to August 31, 1988). That appointment provided a privileged look at grant applications, priority scores, requested dollars, and approved dollars during each of three grant cycles per year. The bulk of renal grants are reviewed by three Study Sections—General Medicine B, Physiology and Pathophysiology A. During more than one of the grant cycles (I did not calculate this information for all cycles), the dollar amount per grant approved by one of those Study Sections was statistically significantly (t test) less than the dollar amount per grant approved by the others, despite the fact that there was no significant difference in the dollars requested per application.

One Study Section simply cut budgets more than the others. Of course, statistical significance does not prove causality. Indeed, one can conjure many causes of this difference—one group of investigators overbudgeted, different types of research have different costs, etc. But my bias is that the cause was inherent to the way the budget-cutting Study Section approached the final dollar amount. The result of this action is told by this anecdotal remark by one of Nephrology's most innovative and creative investigators: "It's nice to get funded, but they cut the heart out of the grant." There were other items I found of interest during my rotation on the Advisory Council: (i) The rarity with which major items of equipment were approved was noteworthy. (Are we guilty of a complaint leveled at American Businesses, in that we spend now without investing in the future?). (ii) There is the virtual extinction of more than one technical person per grant. The result of this action is told by this anecdotal remark by one of Nephrology's most innovative and creative investigators: "It's nice to get funded, but they cut the heart out of the grant." There were other items I found of interest during my rotation on the Advisory Council: (i) The rarity with which major items of equipment were approved was noteworthy. (Are we guilty of a complaint leveled at American Businesses, in that we spend now without investing in the future?). (ii) There is the virtual extinction of more than one technical person per grant. (Can it be that no project in nephrology could be accomplished more effectively with more than one technician?) (iii) Fifteen of 17
senior physician-scientists (i.e., over age 50) with a track record of NIH support failed to have their applications approved at a fundable priority. (Surely, this must have had a dismal impact on fellows and trainees in the laboratories of those investigators, which included colleagues at several of our most distinguished institutions.)

The intent of the peer review groups was marvelous—to save dollars at one level so that the residual dollars would be available for additional grants. In other words, awarding fewer dollars per investigator is perceived to allow the funding of more investigators: "less in more." This has the enticing appearance of being logical, as seen from the parochial but less than in-depth view available to the Study Section. Let me examine the ultimate consequence of this course of action, when its results are repetitively fed into the NIH bureaucracy, and determine if "less is more."

Important tasks of NIH include examining and funding all aspects of biomedical research. Areas of new needs are encouraged by several mechanisms, including Requests for Proposals (RFPs) and Requests for Applications (RFAs). Outside of these few and often unanticipated areas, no medical or scientific discipline should have access to the largess of NIH at the undue expense of another. I cannot conceive of any reasonable person who would want to challenge this principle. Notice another way to state this point: the percentile payline should not differ greatly from one area of investigation to another.

Now, combine "budget reductions" by Study Sections with the principle of equitable dispersion of funding in science by NIH and examine the results. If a Study Section in one area of science reduces investigator-requested budgets more aggressively than do Study Sections in other areas of science for the first time, the dollars previously allocated to that research area will now allow the funding of more grants. That is, the desire of the Study Section to fund more investigators could be achieved, and "less is more." However, NIH cannot allow funding of one area to get out of line with funding in another area. This results in one of two courses of action: either the dollars allocated for research in the area reviewed by the budget-cutting Study Section are reallocated to some other area or, more likely, the absolute number of dollars allocated for the Study Section's area is reduced in the following year's budget. Such actions are necessitated according to the principle of preventing funding in one area from becoming "excessive" in comparison to other areas. The result of repetitive rounds of aggressive reduction of investigators' submitted grant budgets by one Study Section is apparent: each successive round of aggressive reduction in approved grant dollars will result in NIH budgeting fewer and fewer dollars to the area of research reviewed by the Study Section. In other words, approving fewer dollars per investigator by a Study Section results in fewer dollars for research in the area reviewed by the Study Section! ("Less is not More: Less is Less.")

FUNDING JUNIOR INVESTIGATORS

Let me be absolutely clear. Funding of beginning investigators is a premier priority. It is of fundamental importance for the future of nephrological research. More important, the vitality of new investigators is the hope for the future health of people with renal diseases. Unfortunately, the mechanisms available within the grant funding arena at NIH carry a serious downside. FIRST (First Independent Research Support and Transition) awards, which are "intended to underwrite the first independent investigative efforts of an individual; to provide a reasonable opportunity to demonstrate creativity," carry a $350,000 limit over their 5-year life—essentially, $870,000 per year before "negotiated reduction." Perhaps in the beginning this was viewed as a way in which fewer dollars would enable funding of more investigators: "less is more." However, as the practice has evolved, FIRST grant applications are reviewed by the same Study Sections that review regular RO-1 investigator-initiated grant applications and enter into the same percentile ranking for that Study Section. What is the result of this set of circumstances? To the extent that a Study Section favors a FIRST application from a beginning investigator in its rankings, it impacts negatively the percentile ranking of RO-1 applications that do not receive this bias. Thus, a $870,000 per year award is funded at the expense in the percentile ranking of a regular RO-1 grant, which would average in excess of $100,000 per year. Since less money will be needed to reach the target percentile payline if a FIRST instead of a RO-1 is funded, less money needs to go to that area of research in order to meet the target percentile payline. ("Less is not More: Less is Less.")

NEGOTIATED REDUCTIONS

I now turn away from peer review considerations and consider how we in the nephrological community have reacted to the NIH policy of reducing dollars to funded investigators below that approved by the (as we have seen, budget-cutting) Study Sections. What did this do to our research? We did almost anything to avoid firing research personnel. We delayed experiments. We delayed purchase of expensive supplies. We rebudgeted to supplies our pitifully small allocation for replacement of equipment. We did then-current work at the expense of future work. We "stole" funds from elsewhere—clinical practice,
pharmaceutical awards. THIS IS WHAT WE DID NOT DO: We did NOT complain to NIH. We did NOT complain to our U.S. Representatives. We did NOT complain to our U.S. Senators. Why not? Well, you know... The dollars I don't get will enable NIH to fund someone else: "less is more."

What is the result of this passivity on our part? I recently had the opportunity to meet with the Legislative Director in the Office of Congressman Roybal of California, who serves on the important House Appropriations Subcommittee that funds NIH. I was enormously impressed by the erudition of the Legislative Director. He was aware of the importance of stable funding for medical research, of the impact current support plays in the nurturing of the next century's investigators. He had a firm understanding of the process of NIH budgeting. Among the points I made to him was the serious, detrimental impact "negotiated reductions" in awarded dollars has on research. His response? (I paraphrase, but do so accurately.) "NIH cut awards eight percent; we heard no complaints. NIH cut awards ten percent; we heard no complaint. NIH cut awards 14 percent; we heard no complaint. How are we to know that it isn't all 'fat' that's being cut?" Clearly, with respect to negotiated reductions, both from their impact on our conduct of research and from the Congressional point of view, "Less is not More: Less is Less."

**SALARY CAPS**

This is the policy under which the maximum salary NIH will pay to an investigator (adjusted for the percentage of time devoted to the research) is $120,000 per annum. (Can you image the firestorm that would be generated by a proposal to limit in a similar fashion the personal income of executives in corporations that contract with, for example, the Departments of Defense?) Did you complain to NIH? Did you complain to your U.S. Representatives? Did you complain to your U.S. Senators? I did not! Why not? Well, you know... The dollars I don't get will enable NIH to fund someone else: "less is more."

How wrong we are! The dollars that are not awarded to investigators because of salary caps are not available to NIH. Those dollars are offset in the appropriation to NIH. In other words, those dollars go back to Congress! In fiscal year 1990 this "extramural salary cap reduction" in the case of NHLBI is $2,059,000. The result is that over two million dollars—about 0.2% of the total NHLBI budget—does NOT get spent on NHLBI sponsored research. As salaries rise over the years, the amount captured by the salary cap will surely escalate nearly exponentially, both in terms of absolute dollars and in terms of the percentage of Congressionally appropriated funds. The implication is purely political: Congress can appropriate more and more, but less and less of the appropriation will remain at NIH to send to investigators! Truly, "Less is not More: Less is Less."

**WHAT CAN WE DO?**

_First_, as peer reviewers: we can be objective. We should evaluate the cost of doing the proposed and approved research. We should not get involved in trying to micromanage the NIH budget. The cost of research personnel is not the same nationwide—just as the cost of housing is not the same nationwide. The total budget of a project in city A is not necessarily the same as the budget for the same research in city B. The only question is: "Are the supplies, personnel, etc. requested in the grant application needed to conduct the research effectively and efficiently during the duration of the award?" Among the things of which I am most certain is the fact that we scientists know how to be objective. We just need to practice what we know, remembering that "Less is not More: Less is Less."

_Second_, as a community of scientists: we can discuss with NIH the micromanagement of FIRST and related awards so that Study Sections can review the impact FIRSTs have on science instead of on budgets.

_Third_, and _most important as leaders in the community: we must become politically active. When you are in Washington, go see your representative and senators. It is not only surprisingly painless, you obtain the personal satisfaction of participating in our remarkable democracy!

I recently heard a presentation by Representative Conte of Massachusetts. Rep. Conte is the ranking Minority Member of the House of Representatives Committee on Appropriations and a proponent of medical research. Congressman Conte's advice was (again, I paraphrase, but accurately): "go see your Congressman, plead your case for the future health of the American people. Pound on the table—what do you think defense contractors do?"

Write to the members of Congress from your area. Tell them that:

- funding for medical research, including kidney research, is at a critical situation
- NIDDK's budget for research in constant dollars (adjusted for medical inflation) has declined every year since 1987
- research on kidney and urologic diseases accounts for 2.3% of total federal research, but kidney and urological diseases account for over 8% of the cost of disease in the United States
- fewer than one in five scientifically approved grants are being funded
• young investigators are not being trained  
• we are funding 4,876 fewer researchers in 1991 than in 1968  
• medical research is an investment in the future of all American health-related industries  
• medical research is the only certainty for improved health of the American people.

Write to the members of Congress from your area. Do so as though the future of nephrology depends upon your actions. It does!!!

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