WRITING A SPECIFIC AIMS PAGE

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PROFESSOR, SCMNS

- *The aims are a crucial part of winning over the reviewer. Your whole proposal should be written for a general science audience, not for just specialists in your field. This is particularly important in the specific aims. If you use specialized terminology without explaining it here, you will loose your reviewer's good will quickly, and your chances of funding are slim to none.*

- *Keep it general, and keep it interesting. Make sure to cover each of the four key components: Why, Who, What, and How*

https://www.uab.edu/medicine/cfar/images/Specific_Aims_Examples.pdf

Tied to review, sets the stage, excite the reviewer

- **Significance, Investigators, Innovation, Approach, Environment**
  - **Factor 1: Importance of the Research** (Significance, Innovation), scored 1-9
  - **Factor 2: Rigor and Feasibility** (Approach), scored 1-9
  - **Factor 3: Expertise and Resources** (Investigator, Environment), to be evaluated with a selection from a drop-down menu
    - Appropriate (no written explanation needed)
    - Identify need for additional expertise and/or resources (requires reviewer to briefly address specific gaps in expertise or resources needed to carry out the project)

HOW TO STRUCTURE AIMS PAGE

1. Identify the problem and gap

2. What is your long-term goal in addressing the gap in knowledge: include an overall objective, central hypothesis and rationale

3. State the specific aims: include a working hypothesis for each aim

4. What is the impact from successfully completing this proposal

- *1-2 sentences: Set the big picture, central challenge of your field that lots of people are interested in solving.*

- *2-3 sentences: elaborate on the problem, and what has been going on in your field to solving it.*

- *1-2 sentences: Name a general bottleneck in your field that is slowing or stopping progress towards achieving the big picture named in the first sentence. This is a critical part of your aims! You must have a single, clear Gap*

- *1-3 sentences: elaborate on the Gap, making it more specific and focused. **For example:** "*To overcome these limitations, several groups including our own have…..

- *1-2 sentences: Propose an approach to solving the roadblock. If you are working in a hypothesis-**driven area of work, this is where you'll state your** hypothesis.*

- *(optional) 1-2 sentences: Explain why you and your team are the right people to implement this solution/approach. This is another critical section, it is the Who. You need to point out why not just anyone can do this work, and why you are qualified and ready to jump in and solve it. The best thing is to cite one or more previous papers of yours*

- ***1 sentence: "We are proposing to accomplish goal [or test this hypothesis] with the following specific aims:"***

https://www.uab.edu/medicine/cfar/images/Specific_Aims_Examples.pdf

- *State Aims: they need to be credible, meaning that it is realistic that you can accomplish them given your skills, your budget, and your timeframe. clearly state WHY you will do the aim (X) and HOW you will do it (Y). Sometimes the HOW (Y) is divided into several sub-steps, as a numbered/lettered list, and can even be more than one sentence, if **absolutely necessary. For example:** "*Aim 1: To improve the identification of post- translational modifications and amino acid substitutions on proteins by combining top-down and bottom-up mass spectrometry data

- *1-4 sentences: How clearing the hurdle fits into the big picture. For the NIH, this big picture needs to be tied to improving health or curing disease. For the NSF, this may be solving one of their named grand challenges.*

https://www.uab.edu/medicine/cfar/images/Specific_Aims_Examples.pdf

- https://emergencymed.arizona.edu/sites/emergencymed.arizona.edu/files/sample_nih_proposal_4.pdf

- https://www.ttuhsc.edu/nursing/documents/research/grant-writing-examples-specific-AIMS.pdf

10.   SPECIFIC AIMS

More than 14% of US households are food insecure, or at risk of going hungry because of the inability to afford food. About 21% of households with children are affected, as are more than a quarter of Latino and African-American households. One in eight US households is now enrolled in the Supplemental Nutrition Assistance Program (formerly known as Food Stamps).

Economists and social scientists have spent two decades studying the measurement of hunger, its psychological impact, and its effect on food consumption patterns. Food insecure adults tend to shift dietary intake toward nutritionally-poor, energy-dense foods, which cost less calorie-for-calorie than more nutritionally-rich foods. They also tend to overconsume during episodes of food adequacy in expectation of future food shortages. These behaviors may predispose adults to the development of obesity and diet-sensitive chronic disease. My recent work has demonstrated that food insecurity is independently associated with a higher prevalence of hypertension and diabetes, and poorer diabetes self-management. However a number of crucial questions remain: *Does food insecurity predispose adults to obesity or diabetes? Does food insecurity alter self-management capacity, making diabetes management more difficult? And finally, does reducing food insecurity enable adults with diabetes to improve self-management capacity and intermediate outcomes?*

Diabetes is increasingly a disease of the poor; among US adults 50-64 years of age in California, the prevalence of diabetes is 8% among whites, 16% among blacks, and 22% among Latinos. Diabetes prevalence is twice as high among adults with less than an 8th-grade education as among those with a college education. The objective of this application is to determine whether obesity/diabetes interventions implemented in low-income settings should specifically target food insecurity. My central hypothesis, formulated on the basis of my clinical experience as a general internist at a public hospital and my subsequent preliminary research, is that food insecurity negatively impacts the prevention and control of obesity and diabetes through alterations in dietary intake and interference with self-management capacity. If this hypothesis is correct, one strategy to increase the effectiveness of obesity and diabetes prevention and control efforts in low-income communities may be to directly address food insecurity – a risk factor that has been largely overlooked and that may be causally related to socioeconomic inequalities in the incidence of obesity

prevalence is twice as high among adults with less than an 8th-grade education as among those with a college education. The _objective of this application_ is to determine whether obesity/diabetes interventions implemented in low-income settings should specifically target food insecurity. My central hypothesis, formulated on the basis of my clinical experience as a general internist at a public hospital and my subsequent preliminary research, is that food insecurity negatively impacts the prevention and control of obesity and diabetes through alterations in dietary intake and interference with self-management capacity. If this hypothesis is correct, one strategy to increase the effectiveness of obesity and diabetes prevention and control efforts in low-income communities may be to directly address food insecurity – a risk factor that has been largely overlooked and that may be causally related to socioeconomic inequalities in the incidence of obesity and diabetes. My long-term goal is to implement and disseminate interventions at the clinic and policy level that reduce the burden of obesity and diabetes in low-income communities. By pursuing the following specific aims, I will gather data essential for a formal intervention to shift dietary intake among low-income patients with diabetes toward increased fruit and vegetable consumption (to be proposed in a subsequent R01).

Aim 1: Establish the extent to which food insecurity is related to the incidence of obesity, pre-diabetes, and diabetes. To accomplish this aim, we will use longitudinal data from the NHLBI-funded Coronary Artery Risk Development in Young Adults Study (CARDIA). We hypothesize that food insecurity will be associated with unhealthy dietary intake and 5-year incidence of obesity, pre-diabetes, and diabetes.

Aim 2: Determine whether food insecurity alters response to a diabetes self-management intervention. We will use the infrastructure of an existing self-management intervention which has recruited 702 patients with diabetes receiving primary care in federally qualified health centers. We hypothesize that food insecurity will moderate participants' success with the behavioral intervention.

Aim 3: Conduct a pilot randomized controlled trial of a fruits and vegetables voucher in a population of food insecure patients with poorly-controlled diabetes. We will recruit 60 patients from a safety net clinic with a 43% rate of food insecurity. Process outcomes include success with recruitment, ability to deliver the intervention in a clinical setting, and ability to measure study outcomes. Clinical outcomes include dietary intake, change in blood pressure and glycosylated hemoglobin, and rates of hypoglycemia

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In addition to establishing the importance of food insecurity as a risk factor for difficulty with obesity and diabetes prevention and management, these studies are expected to have an important impact on the design of clinical and public health interventions to shift dietary intake in low-income communities toward more healthy food alternatives. These specific aims build logically toward an R01-level intervention targeted at patients with, or at high risk of, obesity and diabetes. I am well-prepared to undertake this research, but I require continued mentorship in three critical areas to complete these projects and achieve my long-term career goals: advanced statistical techniques; nutrition epidemiology, assessment, and policy; and intervention research. My mentorship team includes experts in each of these areas and has the breadth of expertise to help me obtain critical multidisciplinary skills.

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Checklist

Iterative Approach to Application Planning Checklist

Staying in your niche, propose a project that

- [ ] Addresses a highly significant problem.

- [ ] Is innovative — can create new knowledge.

- [ ] Is unique.

Outline three Specific Aims and one or more testable hypotheses.

- [ ] Create (usually) three Specific Aims you can achieve in four or five years.

- [ ] Make sure they have clear endpoints reviewers can readily assess.

- [ ] Create a hypothesis (or hypotheses) that is well focused and testable by the aims and experiments.

- [ ] Identify a potential funding institute and a study section that would likely embrace your research.

- [ ] Outline experiments.

- [ ] Assess feasibility.

- [ ] See whether you have access to all needed resources and expertise.

- [ ] Make sure the project is not growing too big for your targeted time and budget.

- [ ] If you hit a roadblock, go back to the failure point and revise your plans.

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NOTE: The NEWLY UPDATED version (December 2023) of The Grant Application Writer's Workbook – NIH Version – includes information about the recently updated NIH FORMS-H application package and other recent changes made by NIH, as well as updated URLs and screenshots. You may click on the page icon to the right titled "Principal Changes in This Edition" to learn what changes have been made to the NIH version of the Workbook. You may also wish to click other page icons to view some of the Workbook updates and information. The new NIH Version of the Workbook is applicable for proposals with due dates on or after January 25, 2023, and it is available now by clicking Add to Cart on your left!

In our experience, good ideas submitted to the NIH are turned down more often because of poor packaging and presentation – i.e., poor grantsmanship – than for any other reason. The NIH version of our *Workbook* is designed to avoid that trap.

This *Workbook* will serve as your step-by-step guide to writing a compelling, fundable NIH grant application. We explain how to write each component of the proposal, after which we offer an example. We then invite you to write something comparable for the subject that you are presenting. As you make those responses, one after the other, the first draft of your application gradually falls into place.

Preface to the *Workbook*

Principal Changes in This Edition

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