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Program Description

The ASHP Research and Education Foundation’s Research Boot Camp is a research skills development program composed of distance education, experiential, and research conduct components. (See Figure 1) The program aims to:

1. Foster the development of pharmacists with practice-based research skills;
2. Drive the advancement of translational research by providing clinicians with the expertise, tools and support to start a practice-based research program and answer practice-based research questions; and
3. Enhance safe and effective medication use by promoting evidence-based decision-making for individual patients and populations of patients.

Figure 1
ASHP Foundation Research Boot Camp Structure

Learning Objectives

Upon completion of the Research Boot Camp, participants will be able to:

1. Generate an effectively worded, measurable research question(s) for an observational, practice-based research study that can be conducted in a one to two-year timeframe.
2. Compose a persuasive and defensible introduction to a research plan that includes a review of the literature, a statement of the research problem, the rationale for conducting the proposed research, and a discussion of the significance of finding an answer to the research question.
3. When presented with a specific research question and pertinent information, select the study design most suitable for answering the research question given the research environment.
4. Accurately identify exposure and comparison groups for the research plan when required by the choice of study design.
5. Establish the study observation period required to answer a specific research question.
6. Identify the characteristics and number of research subjects that will meet the requirements of the research design for a specific research question.
7. For a specific research plan, define the research subjects such that the study results meet a balance of the requirements of internal and external validity.

8. Identify accessible resources for the calculation of power requirements for a specific research study.

9. For a particular research study plan, identify and operationalize measurement of exposure, outcomes, and confounders that are adequate to answer the research question.

10. For a particular research study plan, assess if the study design contains potential confounding, selection, and/or measurement bias and select methods to minimize it.

11. When creating the plan for a specific quantitative research study, work with a statistician to generate an appropriate strategy for the statistical analysis of the study's data.

12. Generate a research plan for the implementation of a specific practice-based research study.

13. Identify resources required for the implementation of a specific practice-based research study.

The Research Boot Camp provides participants with an opportunity to engage in a comprehensive distance education and experiential program. Participants will develop a research idea into a well-structured research plan to be submitted for funding consideration by the ASHP Foundation Research and Education Foundation.

**Distance Education**

Participants will complete a sequence of pre-readings, web-based lectures, and module assignments in order to acquire comprehension level learning essential to completion of research plan development work, for observational research using retrospective data, required for the experiential phase and to enable development of the research plan during the experiential phase.

Topics covered will include:

1. Framing the research question
2. Literature review in support of the research study
3. Development of an introduction
4. Generalizability and sampling
5. Causality and bias
6. Study design
7. Measurement
8. Data management and analysis
9. Introduction to statistical analysis

Upon completion of the Distance Education Phase, participants will have developed a draft project plan that includes a background and rationale, research question, specific aims, research design, methods including an analytical plan, and a time table.
Experiential Education

Over a 3-day period in May 2015, at the ASHP Foundation offices in Bethesda, Maryland, participants will convene with three (3) experienced researchers to develop an executable research plan for an observational study that uses retrospective data. Work on the development of plans will be sequential with each new task introduced by a mini-lecture and a question-and-answer session to help participants recall previous learning and address outstanding questions. Participants will share each plan segment with members of their group, and revise the plan segment based on participant and faculty feedback until the plan is completed.

On-site training learning topics will include:
1. Identifying the study’s design
2. Describing the study sample
3. Identifying study measurements
4. Describing study interventions
5. Identifying the study’s analytic approach
6. Discussion of practical aspects of study completion

Research Conduct

Upon completion of the distance education and experiential phases, participants must implement and complete the proposed observational research under the guidance of the senior investigator. The participant’s sponsoring institution must agree to provide adequate seed support and/or resources to enable completion of the proposed research. In addition, Research Boot Camp participants will have the opportunity to apply for a $5,000 seed grant from the ASHP Foundation. A grant application, formatted to meet ASHP Foundation research grant requirements, must be submitted to the Foundation within three (3) months of completion of the experiential program. Progress on completion of the study will be monitored through the established quarterly report process used by the ASHP Foundation to monitor all of its research grant programs. Within twenty-four (24) months of completion of the first two phases, participants will be required to submit the study findings to a national or international biomedical meeting and within six (6) months of study completion, they must submit a manuscript to a peer-reviewed scientific journal.

Eligibility

Successful applicants will be pharmacists with an active pharmacy practice who demonstrate motivation to acquire research methods skills to conduct rigorous practice-based research. Pharmacists with faculty appointments and non-academic pharmacists are encouraged to apply. Individuals will not be eligible if they have completed a formal education program that provided strong research training (e.g., M.S., Ph.D.). Applicants will be expected to document their mastery of the following research-related tasks prior to starting the Boot Camp program:

- Ability to conduct efficient and effective literature searches to respond to clinical questions;
- Critical literature appraisal as employed in routine clinical practice;
- Understanding of biostatistics when encountered in the review of research literature (this does not presume the ability to apply biostatistics in the conduct of research); and
- Documented completion of a program in research ethics.
Applicants will be required to submit an initial research idea pertinent to their clinical practice area. Support from the applicant’s home institution and committed senior investigator are required. The senior investigator must have the requisite research experiences to supervise the applicant’s research. The senior investigator’s track record will be evaluated based on formal research training, publication track record, and success in obtaining extramural grant support. In addition, the senior investigator must plan to participate in a planning call with the Boot Camp participant and his/her assigned Boot Camp faculty member. The senior investigator must commit in his/her letter of support to participate via teleconference in the Boot Camp participant’s presentation of his/her research plan while in Bethesda, MD.

Application Process / Selection Criteria

The external review panel will use the following criteria in evaluating applications on a 100 point scale:

**Applicant Information (25 points maximum)**
- Publications (5 points)
  
  [Information Source: NIH Biographical Sketch]
- Training Expectations (5 points)
  
  [Information Source: Applicant Letter]
- Letters of Support (5 points)
  
  [Information Source: Research Mentor and Director of Pharmacy/Chair Letter]
- Applicant Motivation to Conduct Research and Interest in the Proposed Research (10 points)
  
  [Information Source: Applicant Letter and Statement]

**Institutional Support (35 points maximum)**
- Seed Support (10 points)
  
  (The director of pharmacy/department chair must be specific about the types of institutional seed support (e.g., release time) that will be provided.)
  
  [Information Source: Director of Pharmacy/Chair Letter]
- Senior Investigator Qualifications (15 points)
  
  [Information Source: Research Mentor Letter and NIH Biographical Sketch]
- Research Network (10 points)
  
  (This should include availability of biostatistician and other researchers. The letter writer should discuss specific individuals and their potential contributions to the applicant’s proposed research.)
  
  [Information Source: Director of Pharmacy/Chair Letter]

**Research Idea (40 points maximum)**
- Feasible (20 points)
  
  (Applicants should address data access, access to a sufficient number of patients, event rates, etc.)
  
  [Information Source: Research Idea Narrative]
- Novel (10 points)
  
  [Information Source: Research Idea Narrative]
- Relevance (10 points)
  
  [Information Source: Research Idea Narrative]
Itemized Instructions for Application

Applicant Information
Self-explanatory

Senior Investigator
The research advisor must be committed to the applicant’s development of research skills and should be willing to serve as advisor throughout the period of activity for the Research Boot Camp, including the period of activity for the research that emanates from the applicant’s participation in the Research Boot Camp. The senior investigator must have the requisite research experiences to supervise the applicant’s research, and the corresponding track record will be evaluated based on formal research training, publication track record, and success in obtaining extramural grant support.

Proposed Research Idea
Include your proposed study question. Describe in no more than 500 words the novel nature and relevance of your study question. This description should be framed similar to the letter to the editor that you would include in submission of your manuscript to a biomedical journal. Also provide detailed information on data access and event rates to demonstrate that your study is feasible.

Supporting Documents Required
Applicants are strongly encouraged to provide the information below to individuals who will write their letters of support to ensure that these letters address each of the required elements.

COVER LETTER
The applicant’s letter should address the applicant’s motivation to conduct research, interest in the proposed study, expectations of the Research Boot Camp, plans for application of the research skills, and project management experience (include specific details on project types, your role(s) on project teams, experiences leading project teams, and project length.

BIOGRAPHICAL DATA
Provide a biographical sketch for the boot camp investigator and for the senior investigator and upload as ONE pdf. The biographical sketch should include information on the applicant’s education, residency/fellowship training, pharmacist licensure, and professional experiences. Biographical sketches must be limited to 4 pages each and must be submitted in the format provided in the PHS 398 form from the U.S. Department of Health and Human Services. http://www.grants.nih.gov/grants/funding/phs398/biosketchsample.doc;

LETTER(S) OF SUPPORT FROM APPLICANT’S DEAN AND/OR PHARMACY DIRECTOR
Along with providing support for the application and the applicant’s ability to meet the entrance requirements, this letter should also indicate that the School/College of Pharmacy or Department of Pharmacy will provide seed funds and/or resources that will match the ASHP Foundation’s grant. Detailed descriptions of the institutional matching support (e.g., funds, release time) should be provided. The letter writer should also discuss the research network that is available to the applicant, including biostatistics support and other researchers.
LETTER OF SUPPORT FROM APPLICANT’S SENIOR INVESTIGATOR
This letter should address the senior investigator’s commitment to the applicant’s development as a researcher and execution of the proposed research. The letter should also describe his/her ability to serve as senior investigator and attest to the applicant’s ability to meet the entrance requirements;

DOCUMENTATION OF THE APPLICANT’S COMPLETION OF A RESEARCH ETHICS PROGRAM;

A WRITING SAMPLE FOR WHICH THE APPLICANT WAS FIRST AUTHOR
(Examples include: published articles, protocols or policies, formulary reviews, or detailed practice-related memoranda.)

CERTIFICATION AND ACCEPTANCE

Program Administration
The Research Boot Camp program is administered by the ASHP Research and Education Foundation. The following policies apply:

- The Boot Camp training opportunity is awarded to an individual participant;
- No stipend or honorarium will be awarded to the participant;
- The participant is responsible for providing his/her transportation and lodging to the experiential site;
- The ASHP Foundation will provide breakfast(s), lunch(es), and one (1) dinner; and
- No per diem payments will be provided by the ASHP Foundation.