

Training and Mentoring in Preventive Cardiology

The Preventive Cardiology Program at NewYork-Presbyterian Hospital offers both clinical and research training opportunities for individuals from multidisciplinary backgrounds. We have trained several cardiology fellows, internal medicine residents, medical students, public health and education majors, statisticians, etc over the past several years. We strongly believe that a multidisciplinary approach is critical to reducing the burden of cardiovascular disease (CVD) in our society; therefore, we work as a team and train individuals with diverse backgrounds that are committed to a future in the prevention of CVD.

A. Goals of the Program

The purpose of our training program is to provide a positive experience to new and early career investigators interested in patient-oriented research in the field of CVD prevention. The trainees will gain exposure and skills relevant to a variety of phases of clinical research in formal and informal settings, under my guidance. The research experience with us is expected to equip the new investigator to make a decision about whether or not to pursue an academic career in preventive cardiology or other areas of clinical research. For trainees that have already committed themselves to a career in clinical research, the goal of the mentoring program is to prepare them to become independent scientists in patient-oriented research. Clinical training in preventive cardiology in conjunction with research training is available to qualified applicants.

B. Strategies for Mentoring New Trainees in Patient-Oriented Research

Early career investigators need exposure to the various phases of patient-oriented research in order to be well prepared to make professional decisions about their own long-term goals, and to help them gain independence as a clinical investigator. Our preventive cardiology research program attracts trainees that work with us for a variety of time periods, ranging from a summer rotation to a 2-year post-doctoral research fellowship. In addition, we mentor junior faculty members until they become independent scientists. The variety of trainees we have lends itself to a core curriculum, with a flexible component depending on the time the trainee will work with us.

Historically our strategy has been to meet with prospective trainees to determine their goals for participation in clinical research and to discuss projects that are appropriate given the amount of time that they will devote to a training program. In tailoring a mentoring plan we also take into consideration the trainee's current level of experience and the desired new skill sets to be developed. For most trainees that spend one or more years with us, and we try to expose them to as many phases of research as time will permit. While some trainees desire to only conduct analyses and publish papers, we discourage this practice because it is a very narrow view of what patient-oriented research entails. In some cases, when the trainee will only be with us for a short period of time, we expose them to a specified phase of research listed below:

- Formulation of hypotheses and Information gathering phase
- Proof of concept and collection of pilot data phase
- Study design phase

- IRB application phase
- Grant writing phase
- Clinical research execution phase (direct patient/subject interaction)
- Data management phase
- Data analysis phase
- Abstract and Manuscript Preparation phase
- Communication and dissemination of results phase

The following is a list of 10 basic competencies that are expected to improve as the trainee progresses through our research program and how we support their development.

Core Competency	Resources to develop competencies
1) Knowledge of the fundamentals and ethics of human subjects research	<p>Mentor and trainees are required to take a course in Good Clinical Practices (GCP) and to receive GCP certification by the Office of Clinical Trials prior to participating in any research. This must be renewed annually.</p> <p>Mentor and Trainees will be required to register for the course “Responsible conduct of research and related policy issues” offered by the Office of Research Administration and will meet the requirements for instruction in the responsible conduct of research (RCR) policy set by the Public Health Service.</p> <p>All trainees involved in patient-oriented research are required to participate in HIPAA training provided by Columbia Presbyterian Medical Center.</p>
2) Expertise to perform a critical literature review for a specific topic of interest	All trainees have computers with access to the internet and the expansive Columbia University Library system. Library cards and monetary support is available to copy research articles. Our research program also has on-line subscriptions for many medical journals to facilitate the download and electronic storage of pertinent literature.
3) Competency to develop a focused research question.	Trainees meet with mentor weekly to discuss research progress, formulate hypotheses and to refine research questions. In addition, a weekly research team meeting is held where research questions are discussed to determine their feasibility, novelty and importance.

<p>4) Capacity to design a research project that is appropriate for time devoted to training</p>	<p>In addition to mentorship related to study design on a regular basis, trainees have the opportunity to attend regular seminars offered by the Columbia Irving Center for Clinical Research and the International Center for Health Outcomes and Innovation Research (InCHOIR) that provide formal education related to design, conduct and analysis of clinical trials.</p> <p>Formal coursework for a degree in Epidemiology that provides extensive training in study design and methods is available to interested trainees. Support for this is available through the NIH Training Grant in Preventive Cardiology and a K30 mechanism.</p> <p>In addition, a course sponsored by the Columbia Institute of Human Nutrition and the Office of Research Administration called “Funding for research activities: Basic Issues in obtaining support” is available for credit or audit to trainees.</p>
<p>5) Basic study conduct and performance skills</p>	<p>Similar formal course work as #4. In addition, trainees have the opportunity to work with, learn from many experienced patient-oriented researchers on our team, and have access to other faculty in the Division of Preventive Medicine and Department of Medicine at Columbia University.</p> <p>Trainees on the Columbia University Institutional NIH Training Grant in Preventive Cardiology attend regular meetings with the PI to review progress of ongoing research.</p>
<p>6) Ability to create a data entry program</p>	<p>All trainees are offered formal and non-formal training in database development and data entry. We have a data manager that assists trainees with projects.</p>
<p>7) Knowledge and skills related to basic analytic techniques using SAS program</p>	<p>All trainees are offered formal training in data analysis and computation through a SAS course that our program pays for. Our research program has a full-time statistician whose job responsibilities include assisting trainees with data analysis and interpretation.</p>

	<p>Trainees may apply for degree courses in biostatistics and/or epidemiology to obtain more extensive formal education.</p> <p>Columbia University offers a Master of Science in Biostatistics/Clinical Research Methods Track and a rigorous Patient Oriented Research Track is also available through the Department of Biostatistics funded by a K30 grant.</p>
8) Basic competency for scientific writing	<p>The Columbia University Office of Research Administration offers instruction in grantsmanship that is encouraged for all trainees.</p> <p>Program director gives didactic lectures on abstract writing and preparation of scientific manuscripts to trainees on an annual or as needed basis.</p>
9) Confidence to give oral presentation	<p>All trainees are expected to give at least one oral presentation of their research during weekly conferences for a Columbia University SCOR grant in Atherosclerosis that all members of the Division of Preventive Medicine participate in.</p> <p>Based on available funds, trainees are encouraged to submit research to local and national meetings to gain experience in presentation of research findings.</p>
10) Ability to be an effective research team member and take lead on specific project	<p>Through regular team meetings with multidisciplinary scientists and research staff the trainee learns the importance of effective teamwork to achieve research goals and maximize productivity. Trainees present an update to the group regarding their research project and delegates assignments to various members of the team to ensure success.</p>

Trainees will have an informal evaluation at 1 month, 3 months, 6 months and/or 1 year depending on the duration of training. A formal evaluation of the trainee will be completed at the conclusion of training. In addition, the trainee will be asked to evaluate the training experience, research environment and mentor at the conclusion of his or her training using a standardized evaluation form.

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