Epidemiology of Aging Training Program Guidelines for Advisors and Trainees

I. Didactic Program

Based on pre- or post-doctoral status and past degrees, specific course work is required according to current degree program and prior training. Both pre-doctoral students in Epidemiology and post-doctoral trainees without a prior degree in Epidemiology must complete required GSPH and Epidemiology core courses (please see the Student Handbook, http://publichealth.pitt.edu/epidemiology/academics/student-handbook). As part of the Training Program, trainees will be required to complete additional courses below and may select elective courses pertinent to their field of interest or area of concentration based on the direction and guidance of their advisors and offered in the Graduate School of Public Health as well as other schools and departments on campus. Post-doctoral trainees who already have a doctoral degree in Epidemiology will work with their advisors to take appropriate courses in a non-degree program to supplement their research activities.

The goal of the Epidemiology of Aging course series is to develop trainees that have the knowledge and skills to conduct independent research in aging and epidemiology. Together, the course series build on the foundation provided in our physiology, pathophysiology and methods courses or that the trainees brings from prior training. The four Epidemiology of Aging courses which are required for all trainees are:

EPIDEM 2950 Epidemiology of Aging Workshop (Strotmeyer). These fall and spring term workshops are designed as practical professional skill development to supplement the additional coursework for the Epidemiology of Aging trainees and students. Trainees attend for the duration of their training and register for a minimum of two terms. The workshop includes sessions on: presentations by the students from their research, journal article reviews, longitudinal analyses techniques, and professional skills sessions. The presentation sessions provide an opportunity for students to present and refine their interim research and data analyses by obtaining feedback from peers, faculty and mentors on their work in progress. Journal article review sessions will provide an opportunity for students to identify and share current articles relevant to the epidemiology of aging and develop proficiency in the critical review of scientific literature. Emphasis will be placed on understanding emerging and novel methods in the field, particularly longitudinal statistical analyses techniques (e.g. handling missing data longitudinally; interpreting changes in slopes over time; joint modeling). A faculty member will help student leaders select articles (distributed before the meeting) and will work with students to encourage questions and discussion among the group. Recent cutting-edge methods topics include: Quality Control Pipeline for Genome-wide Association Meta-analyses (Dr. Santanasto, past post-doc trainee and now faculty), Novel Metabolite Composite Score (Dr. Marron, past pre-doc trainee), and Metabolomics Profiling (Dr. Farsijani, current post-doc trainee). Professional skill sessions will vary by semester and cover topics such as career development, grant and professional writing, and longitudinal data analysis. Examples of recent statistical workshops include: Competing Risks Survival Analysis; Time-varying Predictors and Covariates in Cox Proportional Hazards Regression; Causal pathway analyses (all Dr. Boudreau), and Propensity Score Matching (Dr. Xue, past PhD student of Dr. Strotmeyer). Recent career development workshops have been: Tips for Quality Abstracts, Tables and Graphs (Dr. Glynn; Ms. Gmelin, current pre-doc trainee), Scientific posters: is less more? (Dr. Glynn) and Manuscript Writing, parts I and II (Drs. Santanasto and Strotmeyer).

EPIDEM 2980 Biology and Physiology of Aging (Newman). This summer term course introduces students to the aging process as a foundation for research in the epidemiology of aging. Topics for the course include: Overview of aging physiology, molecular and biological processes of aging, model systems of aging and study designs that are currently relevant to human population research. The final assignment is to choose a topic on the basic biology of aging relevant to epidemiologic studies and review recent epidemiologic studies that have assessed this basic biology as a risk factor or target for preventive interventions for aging or an age-related chronic disease. Each student will select one original scientific article on the selected topic to share with the class as a short presentation with discussion. A written literature review of at least 5 original scientific articles on the selected topic will be turned in for the final assignment. These articles should illustrate application of the basic biology of aging to epidemiologic studies, either as a risk factor or as a target for a preventive intervention in a prevention clinical trial.

EPIDEM 2981 Epidemiology of Aging Methods (Strotmeyer). This fall term course introduces the methodological aspects of epidemiologic research in the field of aging and critically evaluates research in older adults. The course focuses on: demography, study design, sampling, recruitment, retention, measurement of key

variables and special populations. Students will write a critical review of a published article and comment on proposed future directions for epidemiologic studies addressing these questions in older populations. A field work component at the Center for Aging and Population Health research clinic will consolidate the theoretical knowledge of the research methodology as the student will personally experience the components of a real visit for an epidemiological study of aging. Activities of the field work will consist of: an observation of an actual clinic research evaluation for these major studies and review of the manual of operations. Students will also write a brief evaluation of one methodology, including a literature review of the test characteristics of the methodology and alternative approaches. By the end of the course, the students will be able to critically evaluate various components of a study to further address the research questions in aging populations.

EPIDEM 2900 Advanced Epidemiology of Aging (Cauley). The spring term course is an advanced research methods course to understand in depth the current epidemiologic research findings regarding common health conditions and geriatric syndromes in the aging population. The course focuses on the common age-related processes and chronic health conditions that contribute to disability and frailty and on enhancing successful aging and preventing disability. The course project involves a data analysis to address an original research question based on preliminary work in the Epidemiology of Aging Methods course (EPIDEM 2981). Data from one of the faculty's research studies is made available for the project. Students prepare the findings as 1) a research abstract and 2) a formal oral presentation and 3) a research manuscript.

II. Other Requirements and Professional Development Activities

Trainees will be required and encouraged to participate in a number of other academic activities throughout the course of the program. These are outlined below.

A. Field Training

The program's field training experience includes basic science and clinical laboratories, the department's epidemiology research centers, participation in outcomes assessments using medical records/electronic health records and the department's recruitment resources as well as in community outreach activities. Our program operates under the strong belief that a fundamental understanding of clinical and basic sciences is extremely important for epidemiology trainees. Students have multiple opportunities to participate in various laboratory activities related to their studies and field(s) of interest.

Research Study Experience

A key component of the training program is the hands-on experience that trainees have available to them in our state-of-the art Health Studies Research Center. The Department of Epidemiology has numerous observational studies and clinical trials being conducted that provide trainees with the opportunity to be involved in data collection and data analysis. Trainees will be encouraged to participate in research that is relevant to their area of concentration. The selection of a specific study will be determined by the trainee and his/her advisor and will need to be approved by the study investigator(s). The Recruitment and Measurement Core of the Training Program, directed by Dr. Nancy Glynn, will develop exceptional skills for trainees to lead investigator-initiated projects by providing mentored hands-on training in recruitment of participants, implementation of novel measures, and quality control for these measures to advance the field of aging epidemiology.

Laboratory Training

Our trainees have access to biorepositories for studies of biomarkers of health/disease, proteomics, metabolomics, and molecular epidemiology. Dr. Joseph Zmuda is the leader of the Biology of Aging and Longevity specialty area of the Training Program. The Molecular Epidemiology Laboratory course is recommended for trainees that do not have experience in molecular and genetic laboratory methods.

B. Responsible Research Conduct Training

The Department of Epidemiology has required and continues to require the responsible conduct of research as a core fundamental clinical research training element for all students.

Research and Practice Fundamentals (http://www.hrpo.pitt.edu/): **Required for all trainees**
The University of Pittsburgh Human Research Protection Office requires that investigators and everyone (faculty, staff, post-docs, students) involved in the conduct of human subject research complete the human subjects training program developed by CITI (Collaborative Institutional Training Institute; https://www.citi.pitt.edu/) to obtain certification prior to their participation in the research. These online web-based, self-paced modules take approximately 3 to 5 hours to complete the entire curriculum, which can be taken over a period of time. The core training courses, Responsible Conduct of Research, Human Subjects Research, and Conflicts of Interest must be repeated every 3 years. Individuals who have previously completed CITI modules for another institution's training program may be able to transfer those credits to our site. Similarly, individuals seeking to meet certification for other entities (e.g., VA Medical Centers) may be able to transfer Pitt/UPMC CITI credits to those programs. However, only courses completed within the past 2 years that were not Refresher courses may be transferred.

Research Ethics and the Responsible Conduct of Research (PUBHLT 2030): Required for all trainees
All trainees are required and will be required to complete a 1-credit hour research ethics course (2 hours, once per week for half a term) unless documentation is provided that similar training was already completed. The Graduate School of Public Health course, PUBHLT 2030 Research Ethics and the Responsible Conduct of Research, is taken by trainees.

Office of Academic Career Development (http://www.oacd.health.pitt.edu/): **Postdoc - Required**
The OACD Professionalism Series Workshops and Career Development Plan is *required* for post-doctoral trainees. This workshop series for trainees focuses upon a range of career development topics critical to professional career success.

CTSI Responsible Conduct of Research (RCR) Training Center Elective
The Clinical and Translational Science Institute (CTSI; https://ctsi.pitt.edu/) RCR Training Center (https://ctsi.pitt.edu/education-training/responsible-conduct-of-research-training/) provides a variety of resources for trainees to enhance their knowledge and practice of research ethics. An innovative series of RCR workshops offers year round interactive training in topics of interest for bench, clinical, and translational scientists. Geared to the postdoctoral trainee or early career faculty level, research integrity instruction is delivered in a format that combines presentations by senior researchers and experts in RCR with small group case-based discussion of ethical dilemmas.

Center for Bioethics and Health Law (http://www.bioethics.pitt.edu/) **Elective**
University of Pittsburgh Center for Bioethics and Health Law is committed to bringing together clinicians, scholars, and researchers from many schools and disciplines across the University to investigate issues in bioethics and health law by employing empirical, philosophical, humanities, and legal research methods.

C. Independent Research

The philosophy of the program is that trainees become independent researchers through a hands-on approach and collection of data through investigator initiated epidemiology research. Initially, trainees are given access to existing databases to learn to develop a hypothesis, analyze the data, interpret the results, and prepare a manuscript or abstract for presentation and publication. The Epidemiology of Aging trainees are required to conduct an independent research project, which is typically ancillary to an existing ongoing research study. All trainees will design, implement, analyze data, and report the results of an independent study as part of the program. Pre-doctoral trainees are not permitted to solely do secondary data analysis for the completion of their doctoral degrees; all pre-doctoral trainees are required to develop a unique project that requires the incorporation of a novel clinical, laboratory, imaging technique or outcome assessment. The selection of a topic and specific study from which data will be collected will be decided upon by the mentor and trainee, and will need to be approved by the study investigator(s). The ultimate goal will be to submit a minimum of 3 first author manuscripts for publication based on the independent research.

D. Career Development

Both pre- and post-doctoral trainees are also required to attend career development workshops to promote independent research skills. These career development workshops address skills such as publication productivity, presentation of results, grant writing, networking, interdisciplinary and team science, and job searching.

- Professionalism Series Workshops (required for post-doctoral trainees though also open to pre-doctoral trainees) through the Health Sciences Office of Academic Career Development: https://www.oacd.health.pitt.edu/content/professionalism-series

- A list of Student and Professional Organizations and upcoming events can be found on the Pitt Public Health website: https://www.publichealth.pitt.edu/home/life/student-life/student-and-professional-%20organizations

For post-doctoral trainees these opportunities also include the following:

- All Postdoctoral trainees will be *required* to register for a 90 minute Career development orientation within the first 30 days of their appointments. For more information on the orientation please visit the Center for Doctoral and Postdoctoral Career Development: http://dpcd.pitt.edu/postdoctoral-orientation-career-development

- Career Development Plan (*required* for post-doctoral trainees within 3 months of arrival) through the Center for Postdoctoral Affairs in the Health Sciences Office of Academic Career Development (OACD): https://www.oacd.health.pitt.edu/key-features-assessment-process#feature5

- University of Pittsburgh Postdoctoral Association (post-doctoral trainees are strongly encouraged to join this association). The Postdoctoral Data & Dine Symposium is a scientific poster session and networking dinner that allows post-doctoral fellows to present novel research: http://www.uppda.pitt.edu/

In addition, the Office of the Provost has established guidelines for postdoctoral associates and scholars. The guidelines are periodically updated, so please visit http://www.provost.pitt.edu/information-on/guidelines.html, for the most current version.

Post-doctoral trainees are encouraged to apply and attend the Butler-Williams Scholars Program (formerly the NIA Summer Institute on Aging Research Workshop), which offers diverse perspectives and includes presentations, seminars, and small group discussions in research design relative to aging. More information is available on the NIA website:
https://www.nia.nih.gov/research/osp/butler-williams-scholars-program

E. Participation in Research Conferences and Seminars

Providing opportunities for presentation of trainee research is a high priority for the program. Every effort is made to encourage trainees to present their research in a variety of venues including national meetings as relevant to their area of concentration. The University of Pittsburgh has a very rich multidisciplinary training environment in which our trainees may participate and bridges many areas of aging research. All trainees will be required to present their research topic and progress once per year as part of EPIDEM 2950: Epidemiology of Aging Workshop.

Center for Aging and Population Health (CAPH) Epidemiology of Aging Workshop (EPIDEM 2950)
The Epidemiology of Aging Workshop is held in the Fall and Spring semesters, with the course description listed under *I. Didactic Program*. Epidemiology of Aging trainees are expected to attend for the duration of their training and register for a minimum of two terms. Trainees on this training grant are required to serve as teaching assistants and will organize the sessions, typically either 1 post-doctoral or 1 pre-doctoral trainee respectively, per semester.

Internal Research Conference Participation and Special Awards

Trainees should submit their publications and dissertation as part of the GSPH Dean's Day (for the student prize paper) and Dissertation of the Year award that is sponsored by the Delta Omega Honor Society. The Department of Epidemiology has held an Annual Research Symposium each December for students in degree programs. Additionally a University-wide Aging Institute Research Day Geriatrics, sponsored by the University of

Pittsburgh Aging Institute (UPAI), http://www.upmc.com/services/aginginstitute/pages/default.aspx, is held annually, which trainees and early career faculty from the Epidemiology of Aging Program have been active participants and won awards.

Additional Seminars:
Pittsburgh Claude D. Pepper Older Adults Independence Center (http://www.pepper.pitt.edu/) sponsors a seminar series for research related to mobility and balance. If applicable, trainees will be encouraged to present their research as part of the seminar series. The Pepper Center Research Education Component (REC) supports the development of independent early career investigators who wish to conduct age-related balance and mobility disorders research.

The Aging Institute (https://ai.dom.pitt.edu/) has a goal of understanding the biological basis for human aging and sponsors a monthly research conference series on the advancements in the aging biology field.

Trainees are encouraged to attend other seminars based on their interest, including but not limited to those in Geriatric Medicine, Geriatric Psychiatry and Neurology, and the Alzheimer Disease Research Center (ADRC) seminars. Several relevant workshops are taught in the Department of Epidemiology, including one focused on neuroepidemiology and another on cardiovascular disease epidemiology. The Population Neuroscience Seminar (EPIDEM 2017) focuses on the methods and current literature in population neuroscience to understand the intrinsic and extrinsic factors that contribute to brain structure and function in various populations. The Student Workshop in Cardiovascular Disease Epidemiology (EPIDEM 2152) is a "hands-on" workshop that will provide the opportunity for students to practice many of the concepts that they learn in class in the context of CVD epidemiology. A list of upcoming Epidemiology seminars can be found on the University of Pittsburgh, School of Public Health website: https://www.publichealth.pitt.edu/epi-seminars.

F. Health Equity Training and Graduate Certificate in Health Equity

Dr. Tiffany L Gary-Webb, Associate Director of the Center for Health Equity, Associate Dean for Diversity and Inclusion of Pitt Public Health and Special Assistant to the Provost for Race and the Social Determinants of Equity, Health and Well-being, is the leader of the Diversity, Health Equity and Social Determinants specialty area of the Training Program. Dr. Gary-Webb's expertise provides guidance for the program's training and focus in health equity. Graduate certification in Health Equity, directed by Dr. Barinas-Mitchell, is optional though strongly recommended: https://publichealth.pitt.edu/home/research-practice/research-centers-and-institutes/center-for-health-equity/certificate-in-health-equity. The certificate program provides students with an academic foundation for achieving health equity by addressing the systemic root causes of health disparities. In addition to racial and ethnic health disparities and the consequences of social and economic disadvantages, disparities may also be related to sexual orientation, religion, gender, native language, age, and disability status. Students in the certificate program learn to identify and critically discuss a problem in minority health/health disparities using state-of-the-art literature, access the historical or ongoing determinants of an identified health equity issue using quantitative and/or qualitative methods, design and/or evaluate an intervention to address an identified health equity issue, as part of a multidisciplinary team, and evaluate the impact or potential impact of policy measures on overall health, health care access, and quality of care for populations experiencing health disparities. Required courses include BCHS 2524 Overview of Health Equity, BCHS 2526 Health Equity Research: Methods and Interventions, BCHS 2528 Integrative Seminar in Health Equity, and BCHS 2554 Introduction to Community Health.

For those trainees that do not complete a certificate in Health Equity, either the Overview of Health Equity course or the American Public Health Association (APHA) webinar series, "Advancing Racial Equity" will be required. Trainees in the Overview of Health Equity course will learn to define and describe a range of health inequities/disparities from political, social, economic, historical and ethnic points of view as well as the conceptual frameworks used to study health inequities. In group-based discussions, class activities and assignments, the role of cultural "competence" in research and practice, measurement issues in research and practice, and personal and professional roles in eliminating health disparities and achieving health equity will be examined. For trainees that do not complete formal coursework, the APHA series, which explores efforts to address racism in systems, policies and practices, will be taken. "Racism: The Ultimate Underlying Condition" evaluates racism as a driving force of the social determinants of health and equity as well as its historic and present-day impact. Assignments for trainees participating in the APHA webinar series will be to identify the multiple levels on which racism operates; the physiological impacts of racism and discrimination on health; and the principles for and barriers to achieving health equity.

III. Evaluation Procedures

All trainees will undergo a formal annual evaluation, to be completed with the trainee's mentor. Progress in the training program is formally evaluated at least twice a year, as well as through attendance at the Epidemiology of Aging Workshop seminars or other epidemiology of aging courses as offered, and with during meetings for study groups related to field work and one-on-one with mentors. A self-evaluation and an advisor portion are completed in the annual written evaluation (**Table I**) and discussed. The annual evaluation for the trainee is conducted with the Training Committee and mentor(s) and monitored at a minimum of 1 additional in-person meeting, with progress in training assessed and the suggested plans for the next year of training are reviewed. The annual review will include a meeting with Drs. Strotmeyer, Cauley, and/or Newman, and the primary mentor if different, to evaluate new and planned activity, the written progress report, CV, and plans with advisor comments. For postdoctoral trainees, an additional oversight is done by the Schools of the Health Sciences, which is a standardized Postdoctoral Career Development and Progress Assessment Process, and is reviewed yearly at our evaluation. The mentor and trainee will meet to review the evaluation, discuss progress and future goals, and, if necessary, devise a plan of action to address action items. The evaluation forms with comments from the advisor, and the written progress report must be submitted to the Directors after the annual evaluation. Trainees must maintain a B or higher average to be eligible for ongoing support from the training program. Continuation of support from the training program will be partially dependent on the final results of the evaluation and will be ultimately determined by the Director, Dr. Strotmeyer, and Co-Directors, Drs. Cauley and Newman.

The Department of Epidemiology has a formal exit interview surveys for students which we use to evaluate the program, and several committees which meet regularly throughout the year to solicit concerns: a student liaison committee to address general student concerns with the degree programs and courses, and a postdoctoral focus group to address the department postdoctoral training.

Epidemiology of Aging Training Annual Evaluation Forms and Guidelines can be downloaded on the Training Program website.

Table. Summary of Epidemiology of Aging Training Annual Evaluation Forms for trainees.

PART I. Progress Review and PART II. Research and Scholarly Activities
A. Course Requirement Checklist for Program and Degree requirements (if applicable, see below)
B. Areas of Research Interest
C. Research Accomplishments, include New Areas of Research or Technical Expertise and Major New Initiatives undertaken in the past year
D. Publications
E. Teaching
F. Honors and Awards
G. Scientific Meetings
H. Other Presentations
I. Other Professional Activities or Accomplishments
PART III. Future Plans
A. Major Plans for Upcoming Year (use bulleted list format)
B. Planned coursework for Program and Degree requirements (if applicable)
C. Research Project Goals
D. Research and Other Training Plans
E. Anticipated Publications (include project titles)
F. Anticipated Scientific Meeting or Workshop Attendance
G. Fellowship or Other Funding Applications Planned (include award name)
H. Other Professional Training (teaching activity, etc)
I. Career Goals: i. What further research activity or other training is needed before starting a job search?, ii. When do you anticipate beginning a job search?, iii. Indicate any other issues that affect your job search.
PART IV. Program feedback on additional training suggestions and strengths/weaknesses
PART V. Summary, recommendations and final comments Overall Written Evaluation of Accomplishments and Performance (to be completed by Mentor)
PART VI. Overall Evaluation Outstanding | Commendable | Satisfactory | Marginal | Unsatisfactory* *Reasons for the unsatisfactory rating should be clearly stated in evaluation, and specific recommendations for actions that mentor(s) and students should take to correct the deficiency should be provided.

Pre-Doctoral Trainees:

1. Complete T32 Progress Report Pre-doctoral Annual Evaluation
2. Checklist on program requirements
3. Updated CV in GSPH or Digital Vita format

Post-Doctoral Trainees:

Epidemiology of Aging Training Evaluation Forms:

1. Complete T32 Progress Report Post-doctoral Annual Evaluation
2. Checklist on program requirements
3. Updated CV in GSPH or Digital Vita format

Center for Postdoctoral Affairs in the Health Sciences Required Forms:

1. Complete/Update Post-doctoral Career Development Plan
2. Complete/Update Post-doctoral Self-Assessment
3. Complete Post-doctoral Outcome Summary – upon exit

Submit evaluation forms with advisor comments, CV, and written progress report to Elsa S. Strotmeyer, PhD, MPH, Training Program Director, strotmeyere@edc.pitt.edu, and Michelle Utz-Kiley, Project Coordinator, meu2@pitt.edu.

Epidemiology of Aging Area of Concentration Course/Program Checklist (Refer to Student Handbook for Departmental and School Degree Requirements)

Student Name:	**Date Updated:**
Advisor Name:	
Course/program	**Mo/Yr Completed/Attended**
REQUIRED (unless already completed)	
EPIDEM 2980 Biology and Physiology of Aging	
EPIDEM 2981 Epidemiology of Aging -Methods	
EPIDEM 2900 Advanced Epidemiology of Aging	
EPIDEM 2950 Epidemiology of Aging Workshop (2 terms minimum)	
See Department of Epidemiology guide for requirements for degrees	

The Department of Epidemiology student forms can be found on the University of Pittsburgh, Public Health website: https://www.publichealth.pitt.edu/epidemiology/academics/forms.

Department of Epidemiology requirements for degree programs:

- MPH Student Graduation Checklist
- MS Student Graduation Checklist
- PhD Student Graduation Checklist