Environmental, Occupational and Injury Epidemiology Program
Department of Epidemiology

Program Learning Objectives

Introduction

The Environmental, Occupational and Injury Epidemiology Program prepares students to apply the perspective, theory, and methods of epidemiology to practical and scientific problems related to the control of injury and the relationship of human health to the environment and the workplace. The subject matter embraced by this program is extraordinarily broad, potentially including a wide range of health outcomes and exposures, but usually focusing on the traditionally defined realms of safety hazards and exposures to physical and chemical pollutants in the workplace and in ambient air, water, and soil. This program is designed primarily for students interested research and academic careers who will complete the PhD, but individuals with appropriate backgrounds may also pursue the MPH with a concentration in this area.

Learning Objectives

The learning objectives for this program area are the same as those for the Department of Epidemiology as a whole with the following additions.

Upon satisfactory completion, students in the program should be able to:

- Apply the competencies laid out in the Epidemiology Department's overall learning objectives to the solution of problems in one of more of the program subspecialty areas;
- Enumerate and discuss important health problems, with their descriptive epidemiology and determinants, for one or more of the program subspecialty areas of occupational, environmental and injury epidemiology;
- Identify key surveillance systems and other sources of data relevant to the problem;
- Discuss study design and measurement issues particular to the subspeciality area;
- Appreciate key concepts from such related disciplines as environmental sciences, industrial hygiene, and injury control;
- Collaborate with experts in the preceding fields to conduct epidemiologic research;
- Appreciate the uses of epidemiologic research in identifying hazardous agents, evaluating environmental injustice, and in setting health and safety standards;
- Communicate epidemiologic concepts, methods, and findings to community groups, labor unions, health professionals, government agencies, and employers.

In addition, students specializing in occupational or environmental epidemiology who satisfactorily complete the PhD should be able to:

- Understand the principles of exposure assessment and collaborate with specialists from the relevant fields to assess exposure for epidemiologic research;
- Analyze and interpret exposure data in epidemiologic studies.

Methods for Meeting Learning Objectives

Because of the diversity of the subject matter, students and advisors work in consultation to develop individualized programs of study to meet students' personal objectives. Students will typically specialize in one of the three areas of occupational, environmental, or injury epidemiology, but the areas may intersect; for example, injuries may have occupational causes, or the same chemical agent may be present in both workplaces and the ambient environment.

While involvement in research is the primary pathway to developing expertise, formal coursework serves both as a starting point and a means to achieve breadth. The program faculty have adopted curricular guidelines to assist students and their advisors in defining key content areas of this diverse field, designing a program of study, and assuring that key competencies are achieved. Three courses are offered within this program area: Environmental Epidemiology (EPID 785), Occupational Epidemiology (EPID 780), and Injury as a Public Health Problem (EPID 783). Other relevant areas of study include the epidemiology of specific health outcomes, such as cancer or reproductive disorders, and material from closely-related disciplines such as environmental sciences, industrial hygiene, toxicology, and medical geography. Students are also encouraged to attend the Environmental Epidemiology seminars within the program area and other relevant seminars offered by the Department, the Injury Prevention Research Center, the Environmental Protection Agency (EPA), the National Institute of Environmental Health Sciences (NIEHS) and other entities.

Students are strongly encouraged to become involved in research early in their studies. This involvement not only facilitates the student's intellectual growth as an epidemiologist, but teaches practical skills of data collection, data analysis, and research conduct. Opportunities for research in environmental, occupational, and injury epidemiology are available within the Department and the School of Public Health, through other campus or government centers, such as the UNC Injury Prevention Research Center, the EPA and NIEHS.

Documentation of Achievement of Learning Objectives

Evidence of achievement of learning objectives is documented at several points in a student's program of study. Performance in required and recommended courses is an early measure of progress toward the learning objectives. These courses utilize different means of student evaluation including traditional examinations, course papers and presentations. In the course of the Intradepartmental Review, the adequacy of coursework and experience are evaluated, and guidance is offered regarding selection of supporting coursework in epidemiology, biostatistics, environmental sciences and other related fields, as described above. The Master's comprehensive examination and doctoral qualifying examination address command of epidemiology more generally. The Master's thesis and doctoral dissertation process are focused on a specific issue in environmental, occupational, or injury epidemiology. The dissertation in particular requires the student to develop an independent project as the intellectual leader. The development of the research proposal, the oral defense of that proposal, the conduct of the research, and writing the dissertation and related publications are the key elements in research training at the doctoral level. Publication, presentation of scholarly work at conferences, and successful grant applications are also valuable indicators of student achievement. The demonstrated ability to contribute scholarly work is the ultimate demonstration of achievement of the program learning objectives.