South Carolina Area Health Education Consortium
Progress Report to the Sustainable Universities Initiative

Population Health for Health Professions

Project Vision:
Create Health Professionals with Competencies for
Building Healthy Communities with Healthy Populations

Mission:
Introduce health professions students to public health during their professional training and create within them an understanding of the relationship between the environment and health of the community and its population.

Connecting Health Professions to the Community and Population Health

INTRODUCTION

This project is the outgrowth of the Enhanced AHEC Academic Community Partnership for Health Professions Workforce and Educational Reform. The Enhanced AHEC project has involved faculty from MUSC, USC, Greenville University Center, technical education institutions, the AHEC system, representatives from the State Budget and Control Board, the Commission on Higher Education, DHEC, DHHS, SCMA, SCHA, third party payers, and the community.

The need for these public health modules was identified in a process where the consortium defined gaps in the education and practice knowledge of health professionals. Dr. Kristine Gebbie, nationally known leader in public health, served as consultant to the project. Dr. Gebbie served on the Pew Commission on Public Health and is a consultant for CDC on the public health workforce. The primary development team included faculty from MUSC College of Medicine, MUSC College of Health Professions, DHEC, and the AHEC system.

The purpose of this flexible series of modules was to provide health professionals, environmental study students, public health practice coordinators, future policy makers and others with a basic introduction to the vocabulary, values, perspectives and skills of population-focused health practice. The individual student who completes all five modules will be able to:

- Describe how a population focus and public health form one portion of the spectrum of health services;
- Identify discipline-specific contributions to improving the health of the public and of specific population groups;
- Describe the knowledge, skills and attitudes that serve as the foundation of population-based health practice;
- Identify ways to collaborate with specialists in public health and population-focused practice to improve the health of populations, and

- Identify environmental threats to health and their relationship to public health.

The modules may be used by all health professions education curricula for physician, nursing, pharmacy, dental medicine, physical therapy, occupational therapy, laboratory science, and in the curricula of environmental engineering and many other disciplines. It can be adjusted for use in graduate, undergraduate and associate degree programs. It can also be adapted for continuing education and new employee orientation.

Upon completion of the modules it was recognized that development of supplemental materials would improve student's understanding of the curriculum content, particularly as it related to environmental health issues. It was also recognized that public health was the perfect forum for introducing the concepts of the sustainability of our world through attention to our environment. A proposal was submitted to the SC Sustainable Universities Initiative for funding to develop case studies and problem based learning exercises to complement each module and to convert the modules to WebCT™ format for use in on-line learning formats. Ms. Laurie Charles, Curriculum Consultant, was brought in by AHEC to implement this phase of the project under the oversight of Ms. Beth Kennedy, Project Director. This report summarizes the progress made on this project.

PROGRESS REPORT

The population health curriculum was first reviewed to identify the environmental threats addressed in each module in order that case studies and problem based learning exercises might best be placed to supplement curriculum content. These are outlined here:

Module 1: The Perspective of Public Health
Module 1 presents the public health perspective on health and illness (including mental health, substance abuse and environmental health) at the community level, introduces the basic vocabulary of public health, and establishes a framework for understanding subsequent modules on specific skills and knowledge used in pubic health practice.

Environmental Threats Addressed in This Module:

- Interventions designed to facilitate environmental adaptations that improve or protect public health
- History of the enactment of sanitation codes
- Outline of federal, state and local agencies concerned with environmental health
- Responsibilities of public health in the prevention of and protection against environmental threats

Module 2: Epidemiology, the Basic Science of Public Health
Module 2 provides an overview and introduction to the fundamentals of epidemiology as the basis for the science of public health.

Environmental Threats Addressed in This Module:

- Recognition by Hippocrates of the importance of understanding the environment in assessing risk
- Investigation of disease suspected to be related to threats in the environment, e.g., cancer clusters
- Use of surveillance data in the investigation of environmental exposures

Module 3: Health Promotion and Behavior Change for Health

Module 3 introduces the concept of primary prevention and examines its impact on reducing chronic disease and improving health.

Environmental Threats Addressed in This Module:

- Physical environment as a determinant of health
- Air quality issues affecting health (acid rain, depletion of the ozone layer)
- Health education and related organizational, political and economic interventions designed to facilitate environmental adaptations that improve or protect public health
- Environmental pollutants and toxins (asbestos, other occupational hazards)
- Policy makers as targets to foster adaptation of healthful changes in the environment

Module 4: Building Healthy Communities

Module 4 introduces the concepts of strategic planning and healthy communities for improving the health of diverse populations and includes content on the social and cultural influences on health.

Environmental Threats Addressed in This Module:

- Importance of conducting an environmental scan to define environmental threats as one aspect of planning for a Healthy Communities project
- Tillery, NC, Healthy Communities Award Winner – HELP Project (Halifax Environmental Loss Prevention)
- SCORECARD Web site exercise to identify local environmental threats to health

Module 5: Emerging Public Health Issues

Module 5 provides exposure to some of the emerging issues that will affect the health of the public and examines the challenges and opportunities they pose to the public health system.

Environmental Threats Addressed in This Module:

- Connection of air, water and soil
- Exposure pathways for environmental health hazards
- Lead poisoning
- Regulation, protection, and control
- The role of the health professional in reducing and preventing environmental threats
- Public health communication; risk; perceived hazard; outrage

Environmental Health Case Studies

In the second phase of the project, Curriculum Consultant Laurine Charles worked with Kathryn Mock, a graduate student at the University of South Carolina, to assist with editing environmental health case studies under development as part of a graduate project. The case studies were designed to show environmental health problems from a variety of perspectives, including patient/client, "polluter", community, practitioner, public health (DHEC), consultant (Clemson Extension Service), and advocate. Based on cases in North and South Carolina, some had one primary focus while others had multiple foci. The content of each case study was identified with the most logical content match for incorporation into the population health modules. The case studies may be accessed at http://home.sc.rr.com/masverde/ and are described here briefly.

Cancer Cluster defines leukemia and outlines the process of investigating suspected cancer clusters by comparing and contrasting the Little River cancer cluster with the 1986 aplastic anemia cluster in Gaffney. This case study was identified for use with Population Health Modules 2a, 2b, 4b, and 5b.

Something's Fishy presents a clinical scenario of a young pregnant woman with a history of miscarriage and birth defects that is traced to consumption of freshwater fish contaminated with mercury. The case study forms the basis of investigating and communicating to the public the risk of mercury contamination of freshwater fish species and is based on a case in the Waccamaw Neck area. This case study was identified for use with Population Health Modules 5b.

In *Factory Farms,* a friend asks about a proposal to establish a local chicken farm, which serves as the basis for exploring the environmental hazards associated with flooding of hog farms in North Carolina following Hurricanes Dennis and Floyd. This case study was identified for use with Population Health Modules 4a, 5a, and 5b.

Georgetown, SC features an applicant for a job interview in that city who investigates the pollution histories of the pulp and steel mills. This case study was matched with Population Health Module 5b.

A New Disease or an Old Enemy? is a clinical scenario featuring a 6-year-old boy displaying signs of hyperactivity and appetite suppression. The case serves as the basis for a brief review to rule out hyperactivity, hyperthyroidism and vision and hearing problems and is followed by a medical history suggestive of environmental exposure to lead. This case study can be featured with Population Health Module 5b.

Problem Based Learning Exercises

In the third phase of the project, the Curriculum Consultant developed problem based learning exercises to accompany the Population Health Modules. Work on the problem based learning exercises (PBLs) began with development of an overview of the process for faculty unfamiliar with problem based learning. Assessment tools were developed for evaluation of student progress by tutors as well as for student evaluation of tutor's skills.

The environmental health case studies were then used as the basis for writing PBLs on the same topic. Each PBL package was written with three to four scenarios for the students and a facilitator's guide with expected outcomes, learning objectives and additional resources. The PBLs are available at http://www.ahec.net/coweb/pophealth/PBL and are described here briefly.

"Friends" was developed from *Cancer Cluster* and consists of three scenarios in which a friend asks for advice about seven cases of leukemia in one community.

"Melissa" was based on *Something's Fishy* and includes both a clinically based PBL and a generalist exercise. Both formats feature four scenarios for investigating mercury contamination of freshwater fish species as the cause of miscarriage and birth defects in a 29 year old woman.

"Farmer in the Dell" was adapted from *Factory Farms* and consists of three scenarios in which students research the environmental hazards associated with hog farming.

"Georgetown" features four scenarios in which students investigate the history of pollution by pulp and steel mills and two publications on dioxin reassessment that was released by the Environmental Protection Agency for public review and comment.

"Shawn" was developed from *A New Disease or an Old Enemy?* It also consists of two formats, one a clinically based case, and one a generalist case for use by non-clinical health professions students. Each format contains three scenarios for investigating lead poisoning in a family renovating an old house.

The environmental PBLs were reviewed by members of the consulting consortium and updated based on reviewer comments. It was recognized at this point that additional PBLs could be written on other topics to accompany other modules.

"Mal de la Rosa" was written as an epidemiologic study of pellagra in the South at the turn of the century as investigated by Dr. Joseph Goldberger of the U.S. Public Health Service. Staged in four scenarios, the PBL guides students in the investigation of the cause of the disease and explores ethical implications of the study methods used. It also examines the social reforms advocated in the process as well as the dynamics of the public response.

"Our Town" anonymously features the award winning town of Tillery, NC, examining the impact of grassroots change efforts, the development of Healthy Communities initiatives and the use of strategic planning. Three scenarios guide discussion of one community's efforts to affect change in the economy, social standing and to monitor the environmental impact of corporate livestock farming in the area.

"Diabetes" uses the American Diabetes Association's *Diabetes Risk Test* to identify on a personal level, one or more students in the PBL group who might be at risk for developing diabetes. The tasks guide investigation of diabetes as a chronic disease from a clinical perspective. The public health perspective is explored in terms of the development of diabetes screening, treatment, prevention, and health promotion programs for communities of individuals.

WebCT™

Dr. Richard Hernandez was contracted to convert the population health modules and supplementary materials into WebCT™ format for use in on-line education. WebCT™ provides a platform for authoring web based instructional materials and presenting content in either synchronous or asynchronous formats. The programming provides students with access to chat rooms, bulletin boards, and a student lounge, as well as links to glossary items, the library at the Medical University of South Carolina, and other internet resources. The problem based learning exercises have been structured to allow faculty coordinators to control which scenarios are available to students in a manner very similar to the face-to-face interaction provided in traditional classroom settings. Faculty coordinators can monitor discussion on a scenario and decide when to post the next scenario for consideration. The WebCT™ format also includes interactive self-assessment tools as well as hidden exam and project materials controlled by the faculty coordinator. The WebCT™ platform is sponsored by the Medical University of South Carolina, requiring users to obtain access through Beth Kennedy at SC AHEC. Ms. Kennedy may be reached at (843) 792-4431 or via e-mail at kennedyb@musc.edu. The WebCT™ version of the modules is available at http://foxglove.muusc.edu.

Targeting Broader Audiences

The module authors met one final time to review the finished project and offer next step recommendations. It was recognized that the content of the modules would be beneficial to a much broader audience than originally intended. Appreciating the fact that the current public health workforce was recruited primarily from graduates of traditional health professions educational programs, it was recommended that public health practice coordinators and others involved with employee training programs be targeted for mass marketing. Abstracts were submitted for presentation of the modules to meetings of the National AHEC, American Public Health Association, Association of State and Territorial Health Organizations, and Association of Schools of Allied Health Professions. Mass e-mail broadcasts were also developed to send news releases to all schools of public health, allied health, nursing, medicine, dental medicine and pharmacy.

Finally, the website for the modules was updated to collect user names and e-mail addresses for future assessment of the effectiveness of the modules. Planning is currently underway to collect data on a pilot study between Clemson University, the University of South Carolina and the Medical University of South Carolina with updates to follow.

Respectfully submitted,

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