

PRINCIPLES AND METHODS OF EPIDEMIOLOGY

PHCO 0502

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Course Description: This introductory course will provide the basic skills for independently conducting an epidemiologic investigation and a foundation for higher level courses. Learning methods consist of active participation in real world case studies, digestion of the material covered in the required textbook including completion of homework problem sets, lectures and mini-lectures, a 3-page paper and poster, and three cumulative examinations including pre and post-test review. A working knowledge of basic high school algebra is assumed; a prerequisite for enrollment in this course is a passing grade on the Quantitative Skills Assessment examination.

Course Objectives:

- Distinguish among appropriate metrics used in public health such as incidence, prevalence, incidence density, etc.
- Choose among various metrics for communication of public health messages.
- Apply appropriate epidemiologic methods for the investigation of the etiology and determinants of acute and chronic diseases and injuries.
- Distinguish among primary, secondary and tertiary prevention of preventable diseases and injuries and design public health systems for their control and prevention.
- Distinguish between direct and indirect adjustment and apply appropriate methods for calculating adjusted rates.
- Calculate the sensitivity specificity, and predictive value of diagnostic tests and evaluate their relationship to prevalence of disease.
- Detect biases in study design that can lead to erroneous conclusions.
- Weigh various epidemiologic attributes in order to distinguish between association and causality.
- Design public health and clinical systems to accommodate the dual goals of reduction of disease and injury in those at high risk in addition to reducing the burden of attributable disease in the entire population including those at moderate and minor risk.
- Describe the interaction and interdependence of epidemiology with other major core public health and medical disciplines.
- Describe the interaction of disparities in biology, economics, social wellbeing, and other factors that interact to produce injury and disease.
- Identify diseases and injuries of public health importance.

Topics
Introduction and Overview of Epidemiology
Measurement of Disease Occurrence
Standardization, Survival Analysis, Introduction to Study Design
Randomized Trials
Cohort Studies
Case- Control Studies, Measures of Risk
Indicators of Causation, Attributable Risk
Bias, Confounding and Interaction, Genes & Environment
Screening
Infectious Diseases
Outcomes Research
Epidemiology & Public Policy
Ethics in Epidemiology