PHS Competencies

Be able to formulate a concrete, answerable scientific question or research goal.

Translate scientific questions arising from close interactions with clinical colleagues and interdisciplinary teams into rigorously designed studies. Choose the appropriate study design for the hypothesis to be tested, considering the available data.

Evaluate the strengths and weaknesses of quantitative, qualitative, and mixed methods study designs through applied research and critical review of scientific reports.

Be able to conduct and interpret basic statistical analyses, providing evidence for or against specific hypotheses.

Appropriately describe diseases and populations, including case definition (different from a clinical case definition/diagnosis), population at risk (denominator, closed vs open), and disease models. Know the methods and measures of descriptive epidemiology, including case definition, calculation of the primary measures of disease morbidity and mortality, and appropriate comparisons by person, place, and time.

Understand the concepts and practical implications of random and systematic error (i.e., sampling error and bias: information, selection and confounding bias) as they apply to causal inferences in observational studies.

Calculate appropriate measures of disease frequency for given data (incidence, prevalence, cumulative incidence, mortality, case fatality, etc.).

Have a working knowledge of the availability, use, advantages and limitations of various sources of publicly available and/or electronically captured data on health care utilization and outcomes, including but not limited to: major surveys of healthcare utilization, electronic medical records and administrative claims datasets.

Calculate the appropriate measure of risk and understand its interpretation, understand factors that may affect this estimate, including chance, bias and confounding.

Demonstrate an understanding of the organization, financing, and delivery of health care, and how policies impact healthcare systems, health and social inequities, and population health.

Understand how to synthesize and apply theoretical and conceptual models from health systems and related disciplines to conduct research that informs health and healthcare delivery.

Demonstrate competence in applying research methods to establish a foundation towards an independent career.

Demonstrate mastery of a substantive area, including knowledge and application of that knowledge in conducting original research. Master additional areas of statistics that relate to the dissertation.

Understand and apply principles of population health science in characterizing: 1) the multiple determinants of health; and 2) the allocation of resources across those determinants and its influence on health and health disparities.

Communicate research results orally and in writing to both scientists and non-scientists.

Be able to compare and contrast the advantages and disadvantages of both designs and analytic plans for answering specific scientific questions.