Epidemiology and Biostatistics – Core Competencies

Epidemiology:

1. Identify and assess patterns of diseases to postulate hypotheses and to identify strategies to evaluate the impact of health problems.
2. Plan and design epidemiologic studies including observational and experimental designs
3. Evaluate epidemiologic studies and identify limitations and sources of bias
4. Conduct and interpret data analyses from epidemiological studies to address research questions
5. Manage datasets from epidemiological studies using statistical software
6. Synthesize data and literature to communicate findings to a variety of audiences

Biostatistics:

1. Apply basic principles of biostatistics to contribute to the design, planning, and conduct of public health and biomedical studies.
2. Manage databases from public health and biomedical studies using statistical software, e.g., SAS®.
3. Analyze data by applying methodological concepts and interpret the results from public health and biomedical studies.
4. Communicate results from statistical analysis in layman's terms as a member of a multidisciplinary research team on public health or biomedical studies.
5. Identify and apply basic ethical principles pertaining to data confidentiality and interpretation of statistical results derived from public health and biomedical data.

CEPH Competencies

Evidence-based Approaches to Public Health

1. Apply epidemiological methods to the breadth of settings and situations in public health practice
2. Select quantitative and qualitative data collection methods appropriate for a given public health context
3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate
4. Interpret results of data analysis for public health research, policy or practice

Public Health & Health Care Systems

5. Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings
6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels

Planning & Management to Promote Health

7. Assess population needs, assets and capacities that affect communities' health
8. Apply awareness of cultural values and practices to the design or implementation of public health policies or programs
9. Design a population-based policy, program, project or intervention
10. Explain basic principles and tools of budget and resource management
11. Select methods to evaluate public health programs

Policy in Public Health

12. Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence
13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes
14. Advocate for political, social or economic policies and programs that will improve health in diverse populations
15. Evaluate policies for their impact on public health and health equity

Leadership

16. Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making
17. Apply negotiation and mediation skills to address organizational or community challenges

Communication

18. Select communication strategies for different audiences and sectors
19. Communicate audience-appropriate public health content, both in writing and through oral presentation
20. Describe the importance of cultural competence in communicating public health content

Interprofessional Practice

21. Perform effectively on interprofessional teams

Systems Thinking

22. Apply systems thinking tools to a public health issue