

# Competencies for Applied Epidemiologists in Governmental Public Health Agencies

## Tier 2: Mid-Level Epidemiologist

### *Example of Functional Responsibility*

- Carries out simple and more complex and nonroutine data collection, analysis, and interpretation tasks and can work independently; or may supervise a unit or serve as a project leader or surveillance coordinator.

### *Examples of Educational and Experiential Criteria*

- Master's degree with a focus in epidemiology with 2 or more years' work experience in epidemiology in a public health agency; or
- Doctoral-level epidemiologist; or
- Other nonepidemiology professional degree or certification (e.g., RN, MD/DO, DDS/DMD, DVM, PhD, RS) with specific epidemiology training (e.g., MPH degree, CDC Epidemic Intelligence Service program) or at least 4 years' experience performing epidemiologic work under the guidance of a Tier 3 epidemiologist.

### *Competencies and Subcompetencies for Skill Domain 1—Assessment and Analysis*

- A. Identify public health problems pertinent to the population
  1. Use critical thinking to determine whether a public health problem exists
  2. Articulate the need for further investigation or other public health action on the basis of results of literature review and assessment of current data
  3. Collaborate with others inside and outside the agency to identify the problem and form recommendations
- B. Conduct surveillance activities
  1. Design surveillance for the particular public health issue under consideration
  2. Identify surveillance data needs
  3. Implement new or revise existing surveillance systems
  4. Identify key findings from the surveillance system
  5. Conduct evaluation of surveillance systems
- C. Investigate acute and chronic conditions or other adverse outcomes in the population
  1. Conduct a community health status assessment
  2. Recommend priorities of potential public health problems to be addressed
  3. Select investigative processes
  4. Create hypotheses
  5. Assist in design of investigation (e.g., disease investigations, studies, or screening programs)
  6. Use investigation techniques consistent with the public health problem
- D. Apply principles of good ethical/legal practice as they relate to study design and data collection, dissemination, and use
  1. Follow ethics guidelines and principles when planning studies; conducting research; and collecting, disseminating, and using data
  2. Apply relevant laws to data collection, management, dissemination, and use of data and information
  3. Describe differences between public health practice and public health research
  4. Describe human subjects research
  5. Apply Institutional Review Board processes as necessary
  6. Manage conflict of interest as necessary
  7. Apply knowledge of privacy laws to protect confidentiality, including Health Insurance Portability and Accountability Act (HIPAA) and applicable state and local privacy laws
  8. Know agency procedures for handling Freedom of Information Act (FOIA) requests
  9. Apply ethical principles in preparing and submitting publications
- E. Manage data from surveillance, investigations, or other sources
  1. Define database requirements, if indicated
  2. Manage databases
- F. Analyze data from an epidemiologic investigation or study
  1. Create analysis plan for data
  2. Conduct analysis of data
- G. Summarize results of the analysis, and draw conclusions
  1. Apply knowledge of epidemiologic principles and methods to make recommendations regarding the validity of epidemiologic data
  2. Assess need for special analyses, including survival analyses, cost effectiveness/cost benefit/cost utility analyses
  3. Identify key findings from the study

The Centers for Disease Control and Prevention (CDC) and the Council of State and Territorial Epidemiologists (CSTE) convened an expert panel to develop Competencies for Applied Epidemiologists (AECs) in Governmental Public Health Agencies. The AECs were intended to improve the practice of epidemiology within the public health system. The expert panel included representatives from local, state, and federal public health agencies and schools of public health.

The AECs present a comprehensive list of competencies that define the discipline. They describe functional, analytical, and managerial competencies in four tiers—entry-level or basic, mid-level, supervisory and senior scientist/researcher. The AECs were developed within the framework of the eight skill domains of the Core Competencies for Public Health Professionals—a product of the Council on Linkages between Academia and Public Health Practice—and are consistent with the larger field of public health practice.



- H. Recommend evidence-based interventions and control measures in response to epidemiologic findings
  - 1. Establish cultural/social/political framework for recommendations or interventions
  - 2. Use scientific evidence in preparing recommendations for action or interventions
- I. Evaluate programs
  - 1. Assist in development of measurable and program-relevant goals and objectives
  - 2. Assist in development of program logic models and theories of action
  - 3. Identify surveillance and other data for use in tracking program objectives and outcomes
  - 4. Record progress toward program objectives and outcomes
  - 5. Communicate information about progress toward program objectives and outcomes to program managers and staff for use in program planning and modification

***Competencies for Skill Domain 2—Basic Public Health Sciences***

- A. Use current knowledge of causes of disease to guide epidemiologic practice
- B. Use laboratory resources to support epidemiologic activities
- C. Apply principles of informatics, including data collection, processing, and analysis, in support of epidemiologic practice

***Competencies for Skill Domain 3—Communication***

- A. Prepare written and oral reports and presentations that communicate necessary information to professional audiences, policy makers, and the general public
- B. Demonstrate the basic principles of risk communication
- C. Incorporate interpersonal skills in communication with agency personnel, colleagues, and the public
- D. Use effective communication technologies

***Competencies for Skill Domain 4—Community Dimensions of Practice***

- A. Provide epidemiologic input into epidemiologic studies, public health programs, and community public health planning processes at the state, local, or tribal level
- B. Participate in development of community partnerships to support epidemiologic investigations

***Competencies for Skill Domain 5—Cultural Competency***

- A. Describe population by race; ethnicity; culture; societal, educational, and professional backgrounds; age; sex; religion; disability; and sexual orientation
- B. Establish relationships with groups of special concern (e.g., disadvantaged or minority groups, groups subject to health disparities, historically underrepresented groups)
- C. Design surveillance systems to include groups subject to health disparities or other potentially underrepresented groups (using standard categories where available)
- D. Conduct investigations using languages and approaches tailored to population
- E. Use standard population categories or subcategories when performing data analysis
- F. Use knowledge of specific sociocultural factors in the population to interpret findings
- G. Recommend public health actions that would be relevant to the affected community

***Competencies for Skill Domain 6—Financial and Operational Planning and Management***

- A. Conduct epidemiologic activities within the financial and operational plan of the agency
- B. Assist in developing a fiscally sound budget that will support the activities defined in the operational plan and is consistent with the financial rules of the agency
- C. Implement operational and financial plans
- D. Assist in preparation of proposals for extramural funding
- E. Use management skills
- F. Use skills that foster collaborations, strong partnerships, and team building to accomplish epidemiology program objectives

***Competencies for Skill Domain 7—Leadership and Systems Thinking***

- A. Support the epidemiologic perspective in the agency strategic planning process
- B. Promote the organization's vision in all programs and activities
- C. Use performance measures to evaluate and improve epidemiology program effectiveness
- D. Promote ethical conduct in epidemiologic practice
- E. Promote workforce development
- F. Prepare for emergency response

***Competencies for Skill Domain 8—Policy Development***

- A. Bring epidemiologic perspective in the development and analysis of public health policies