Competencies for Applied Epidemiologists in Governmental Public Health Agencies
Tier 3b: Senior Scientist/Subject Area Expert

Example of Functional Responsibility
- Senior scientist/subject area expert in an epidemiologic focus area.

Examples of Educational and Experiential Criteria
- Master’s degree with a focus in epidemiology with 4 or more years’ work experience in epidemiology in a public health agency; or
- Doctoral-level epidemiologist with at least 2 years’ work experience at a Tier 2 epidemiologist level; 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) and at least 4 years’ work experience at a Tier 2 epidemiologist level.

Competencies and Subcompetencies for Skill Domain 1—Assessment and Analysis
- Validate identification of public health problems pertinent to the population
  - Synthesize key findings from the critical thinking process to determine whether a public health problem exists
  - Evaluate need for further investigation or other public health action on the basis of results of literature review and assessment of current data
  - Lead collaborations with others inside and outside the agency to identify the problem and form recommendations
- Organize surveillance
  - Evaluate validity of conducting surveillance for the particular public health issue under consideration
  - Evaluate surveillance data needs
  - Implement new or revise existing surveillance systems
  - Synthesize key findings from the surveillance system and other pertinent information for use by decision-makers
  - Design and conduct evaluation of surveillance systems
- Design investigation of acute and chronic conditions or other adverse outcomes in the population
  - Design a community health status assessment
  - Recommend priorities of potential public health problems to be addressed
  - Determine investigative processes
  - Verify hypotheses
  - Design investigations (e.g., disease investigations, studies, or screening programs)
  - Design investigation techniques consistent with the public health problem
- Synthesize principles of good ethical/legal practice for application to study design and data collection, dissemination, and use
  - Integrate ethics guidelines and principles when planning studies; conducting research; and collecting, disseminating, and using data
  - Design data collection, management, and dissemination and use of data and information to comply with relevant laws
  - Verify conclusions that have been reached regarding distinction between public health practice and public health research
  - Ensure legal and ethical conduct of human subjects research
  - Ensure application of Institutional Review Board processes
  - Ensure that conflicts of interest do not interfere with research or investigations
  - Incorporate privacy laws into study design to protect confidentiality, including Health Insurance Portability and Accountability Act and applicable state and local privacy laws
  - Know agency procedures for handling Freedom of Information Act requests
  - Apply ethical principles in preparing and submitting publications
- Manage data from surveillance, investigations, or other sources
  - Define database requirements, if indicated
  - Manage databases
- Evaluate data from an epidemiologic investigation or study
  - Create analysis plan for data
  - Evaluate data
- Evaluate results of the analysis, and interpret conclusions
  - Assess the validity of the epidemiologic data, taking into consideration bias and other study limitations
  - Assess need for special analyses, including survival analyses, cost-effectiveness/cost benefit/cost utility analyses
  - Synthesize key findings from the study

For more information and for the complete competency set, including all subcompetencies for all domains, see http://www.cdc.gov/AppliedEpiCompetencies/ or www.cste.org/competencies.asp.
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- Formulate new interventions on the basis of evidence when available, and control measures in response to epidemiologic findings
  - Examine cultural/social/political framework to develop recommendations or interventions
  - Design recommendations using scientific evidence or interventions
- Evaluate programs
  - Develop measurable and program-relevant goals and objectives in collaboration with program staff
  - Develop program logic models and theories of action in collaboration with program staff
  - Synthesize surveillance and other data to allow tracking of program objectives and outcomes
  - Critique progress toward program objectives and outcomes
  - Evaluate progress toward program objectives and outcomes for program managers and staff to aid in program planning and modification

Competencies for Skill Domain 2—Basic Public Health Sciences
- Use current knowledge of causes of disease to guide epidemiologic practice
- Develop processes for using laboratory resources to support epidemiologic activities
- Apply principles of informatics, including data collection, processing, and analysis, in support of epidemiologic practice
- Develop and manage information systems to improve effectiveness of surveillance, investigation, and other epidemiologic practices

Competencies for Skill Domain 3—Communication
- Organize preparation of written and oral reports and presentations that communicate necessary information to professional audiences, policy makers, and the general public
- Create messages that follow the principles of risk communication
- Model interpersonal skills in communication with agency personnel, colleagues, and the public
- Use effective communication technologies

Competencies for Skill Domain 4—Community Dimensions of Practice
- Lead epidemiologic studies, public health programs, and community public health planning processes at the state, local, or tribal level
- Develop community partnerships to support epidemiologic investigations

Competencies for Skill Domain 5—Cultural Competency
- Differentiate special populations by race; ethnicity; culture; societal, educational, and professional backgrounds; age; gender; religion; disability; and sexual orientation
- Establish relationships with groups of special concern (e.g., disadvantaged or minority groups, groups subject to health disparities, historically underrepresented groups)
- Ensure that surveillance systems are designed to include groups subject to health disparities or other potentially underrepresented groups (using standard categories where available)
- Organize investigations that use languages and approaches tailored to population
- Ensure that standard population categories or subcategories are used for data analyses
- Use knowledge of specific sociocultural factors in the population to interpret findings
- Recommend actions that will be relevant to the affected community

Competencies for Skill Domain 6—Financial and Operational Planning and Management (Operational Planning, Financial Planning, and Management Skills)
- Conduct epidemiologic activities within the financial and operational plan of the agency
- Describe the financial planning and budgetary process of the agency
- Implement operational and financial plans for assigned projects
- Prepare proposals for extramural funding for review and input from managers
- Use skills that foster collaborations, strong partnerships, and team building to accomplish epidemiology program objectives

Competencies for Skill Domain 7—Leadership and Systems Thinking
- Promote the epidemiologic perspective in the agency strategic planning process
- Promote the organization’s vision in all programs and activities
- Use performance measures to evaluate and improve epidemiology program effectiveness
- Promote ethical conduct in epidemiologic practice
- Promote workforce development
- Prepare for emergency response

Competencies for Skill Domain 8—Policy Development
- Bring epidemiologic perspective in the development and analysis of public health policies

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