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Competencies for Applied Epidemiologists in Governmental Public Health Agencies:

Applied Epidemiology Competencies (AECs)

An introduction to the new standards of practice for epidemiologists working within the U.S. public health system.

AEC Development

In 2004, the Centers for Disease Control and Prevention (CDC) and the Council of State and Territorial Epidemiologists (CSTE) convened an expert panel¹ to define the competencies of applied epidemiologists in governmental public health agencies.

The panel comprised leaders in epidemiology who work in local, state, and federal public health agencies and accomplished individuals from academia and industry.

Goal

To improve the practice of epidemiology in public health agencies.

Objectives

The panel set forth objectives to create a comprehensive list of competencies that

- Define the discipline of applied epidemiology and
- Describe what skills four different levels of practicing epidemiologists working in governmental public health agencies should have to accomplish required tasks.

¹ The expert panel members are listed on the back of this brochure.

For more information, visit

www.cdc.gov/AppliedEpiCompetencies
www.cste.org/competencies.asp

To receive a printed copy of the toolkit, contact CSTE at

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Competency Defined

Competencies are action-oriented statements that delineate the essential knowledge, skills, and abilities in the performance of work responsibilities.² Competencies are describable and observable.

Epidemiology and Epidemiologist Defined

Epidemiology, one of the core sciences of public health, is “the study of the distribution and determinants of health-related states and events in specific populations, and the application of this study to control of health problems.”³

An epidemiologist is a person who investigates the occurrence of disease, injury, or other health-related conditions or events in populations to describe the distribution of disease, or risk factors for disease, for population-based prevention and control.

Public health epidemiologists who work in local, state, and federal health agencies are critical for detecting, controlling, and preventing major health problems. Epidemiologists elucidate and communicate risks and recommend actions to prevent and control an array of serious threats to the public’s health.

The expert panel developed comprehensive epidemiology competencies spanning four levels of practitioners’ responsibility, experience, and skill. An extensive validation process allowed all levels of epidemiologists and stakeholders to provide quantitative and qualitative feedback. Thus, the competencies not only reflect an evidence-based approach to defining competence but also support those whose performance will be ascertained and ultimately improved.

² Nelson JC, Essien JDK, Loudermilk R, Cohen D. *The Public Health Competency Handbook: Optimizing Individual & Organization Performance for the Public’s Health*. Atlanta, GA: Center for Public Health Practice of the Rollins School of Public Health; 2002.

³ Last JM. *A Dictionary of Epidemiology*. 4th ed. New York: Oxford University Press; 2001:62.

Competency Construct

The AECs were built on the competency set developed by the Council on Linkages between Academia and Public Health, with modifications to reflect the particular needs of epidemiologic practice.

The AECs are organized into the eight skill domains defined by the Council on Linkages, as follows:

- Assessment and Analysis
- Basic Public Health Sciences
- Communication
- Community Dimensions of Practice
- Cultural Competency
- Financial Planning and Management
- Leadership and Systems Thinking
- Policy Development

Each skill domain comprises one to nine high-level competencies specifically related to applied epidemiology. Subcompetencies and sub-subcompetencies define each competency to make the expectations of each component clear to the user.

Additionally, competencies are organized into four skill levels, called tiers, with language specific to level of experience, knowledge, and job responsibilities expected within each tier. Tiers are organized as follows:

- Tier 1—Entry level or basic
- Tier 2—Mid-level
- Tier 3a—Supervisory
- Tier 3b—Senior scientist

AEC Resources

Full text of the competency document, additional background information about the AEC development process, and summaries of competencies by tier are available on the websites below. In addition, a “toolkit” is available with resources to help individuals and organizations incorporate the AECs into their practice.

For more information, visit

www.cdc.gov/AppliedEpiCompetencies
www.cste.org/competencies.asp

Intended Uses of the AECs

Epidemiology Practitioners can use the competencies to assess their current skill level and define focus areas for additional training. Striving to achieve higher competency levels can be used as a career-development plan.

Employers can use the competencies to create career ladders for their epidemiology positions on an objective basis. Job descriptions can be aligned with the competencies to objectively evaluate a candidate’s merits in the field. Additionally, organizations can use the competencies to assess their overall epidemiologic capacity.

Educators can use the competencies to design education programs that meet public health agencies’ needs by mapping the competencies to epidemiology curricula. In addition, critical elements of epidemiology practice defined within the competencies can be incorporated into existing coursework. Consequently, epidemiology graduates will possess many of the skills outlined in the AECs, which will help them quickly transition into productive members of the public health workforce.

National Organizations can use the AECs to further develop the epidemiology workforce. For example, both the Epidemic Intelligence Service (EIS) and the CDC/CSTE Applied Epidemiology Fellowship curricula are being aligned to the AECs, and the Association of Schools of Public Health has developed guidelines for mapping the AECs to curricula.

AEC “Toolkit” Components

- Competency Skill Assessments
- Informational PowerPoint® Presentations
- Sample Position Descriptions
- Informational Brochure
- Summary of Training Resources
- Interactive Introduction to the Competencies

Lessons learned from implementation of the AECs will strengthen, and result in future revisions of, the competencies and toolkit.