Applied Epidemiology Competencies: Experience in the Field

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As a federal assignee to a state public health department, I have watched with keen interest the recent development of the Competencies for Applied Epidemiologists in Governmental Public Health Agencies (AECs) by the Centers for Disease Control and Prevention (CDC) and the Council of State and Territorial Epidemiologists (CSTE).[1] I am an epidemiologist with CDC and am assigned to the Kentucky Department for Public Health (KY DPH) Division of Epidemiology and Health Planning through CDC's Career Epidemiology Field Officer Program. Thus, my interest and perspective have been both from a national, overarching vantage point as well as a local/state health department viewpoint. My interest went so far as to solicit both CSTE and KY DPH to include Kentucky in one of the field surveys of the newly drafted AECs so that we could see how they might work in a field setting. However, though I am a CDC employee and an Associate Member of CSTE, I was not part of the development of the AECs other than completing a standard interview with CSTE, as many epidemiologists did earlier in the process, and personally doing the later surveys for Tier I, II, and III epidemiologists that were offered nationally.

There are a number of reasons why the development of specific competencies is good for a given profession. If done well, they provide a standard definition of what is usually done in the profession, a consistent way to assess capacity, greater ease and consistency in designing job classifications, and a way to measure the qualifications of candidates for the jobs we are trying to fill. These are all good and to be sought after, but regarding epidemiology competencies, I am more interested in the application of the competencies where it matters most. For example, what effect will these epidemiology competencies have in the education and training of local and state health department epidemiologists, how might they be used to increase our epidemiologic capacity, and what advantages and disadvantages might they bring to our field, if any?

Interestingly, in the last few years Kentucky has been simultaneously working toward standardizing epidemiology roles in much the same way that CSTE and CDC were doing. The Kentucky public health system, prior to 9/11, had epidemiologists at the state and the major metropolitan health departments, but through the more recent CDC Public Health Preparedness Cooperative Agreements was able to place an additional 18 (17 until mid-2007) Regional

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Epidemiologists across the state to increase epidemiologic and emergency response capacity. They also have a rapid epidemiology response program, called Epi Rapid Response Teams, which is designed to give basic training in epidemiology to local health department personnel so that they can assist in responses at the local level when needed. With the advent of preparedness funding and additional personnel in training, planning, and state and local epidemiology positions, the need for standardization of epidemiology roles and the skills needed to function in those roles was obvious.

As I first looked over a draft framework of the AECs at the 2005 CSTE Annual Conference, I was pleasantly surprised. I had been tasked in early 2004 by the previous Kentucky Commissioner of Health, Dr. Rice Leach, to develop a new epidemiologist job classification series for Kentucky to replace the single classification in use at the time for nonmedical epidemiologists. The framework for Tier I, II, and III AECs was very similar to what we had come up with independently in Kentucky through a long and involved process. This showed me that what CSTE and CDC were doing on a national level matched well with the needs we identified at the state level.

In some states, such as Kentucky, there are multiple difficulties in attracting and retaining formally trained epidemiologists. As an example, in a 2006 KY DPH survey related to the epidemiology competencies here in Kentucky, 51% of our epidemiologists reported having no degree in epidemiology. Because of this, Kentucky has often been forced into do-it-yourself mode as far as training epidemiologists is concerned. It is relatively common to hire the best-qualified applicant for an epidemiology position, but that person may not have a graduate degree or other formal training specifically in epidemiology. These epidemiologists have had to learn epidemiology on the job and generally have available the resources of other formally trained epidemiologists in the public health system for mentoring, consultation, or possible collaboration. Until now, there has been no guidance on what training these workers should have, what career goals they might strive to achieve, or what educational objectives they should set.

Even for people consciously pursuing a career in epidemiology, there has been a glaring lack of standardization in the profession. For example, with what core concepts should we all be rudimentarily familiar, and how should an epidemiologist in one state be compared objectively to an epidemiologist in another state? The lack of formal education for many epidemiologists is a discouraging reality for those of us interested in building epidemiologic capacity, but the neglect of our whole epidemiologic workforce through lack of standardization and principles of career guidance is a real void that CSTE and CDC are now attempting to fill.

I was pleased to find that the necessities of addressing a wide diversity in backgrounds of those practicing epidemiology in applied public health settings and, thus, having a comprehensive structure for career development and training, is exactly what is aimed for with the AECs. In epidemiology, as in many professions, there are not enough formally trained individuals to fill all the available jobs; a retiring workforce will likely make this shortage more acute for epidemiology in the next few years in Kentucky and nationally. In the same KY DPH survey noted previously, a little more than 20% of Kentucky's public health epidemiologists indicated that they plan to leave the field within the next five years. Thus, the failure to recognize the need for a system that allows for flexibility in a person's education and training, as well as one that addresses the wide range of applied epidemiology as a whole, would severely limit the utility of the AECs. But the ability to use the AECs to guide the career development and training of epidemiologists at whatever stage of education and training that they enter the workforce makes the AECs extremely useful.

Epidemiologists (or the practice of applied epidemiology if you prefer) are imperative to all of the 10 Essential Public Health Services.[2] If not directly responsible for each Essential Service, epidemiologists are an important part of the pathway to that service. However, in an independent effort to increase epidemiologic capacity in Kentucky, we discovered that our universities primarily teach research or academic epidemiology focused on what is done in universities, rather than the applied epidemiology that is done in state and local health departments. A good portion of what is identified in the AECs is not taught in current master's and doctoral epidemiology programs. If most schools of public health follow a similar model to what we found in Kentucky (and I suspect they do), students' exposure to applied epidemiology would usually be limited to whatever they gain through an internship or field placement in a health department or other real-world setting. The AECs promise to improve this situation by establishing explicit competency criteria that schools of public health can use to better provide the training that epidemiologists need to work effectively at the state or local level.

The process that CDC and CSTE followed to create the AECs was extensive and inclusive. I am sure that some public health epidemiologists did not hear about the development of the competencies and others chose

not to take advantage of opportunities to provide input. But it seemed that CSTE and CDC made valiant efforts to get the feedback of those who might actually have had valuable input to the process. Through the initial drafting and vetting with experienced epidemiologists, the three-state pilot survey, and the nationwide survey of any interested epidemiologists, feedback, comments, and suggestions were solicited as widely as possible.

I believe that the AECs will be an extremely useful tool in the field. We plan to put them to work in Kentucky as a framework for discussions with our universities about the education process for epidemiologists and other public health professionals. We intend to use the AECs to evaluate and guide our current epidemiologists to target gaps in their own skills and training, as well as to craft future epidemiology job classifications. Implementation of the AECs will also provide an opportunity for state and federal government agencies to enhance their ability to respond to public health emergencies by delineating some of the pertinent skills of the epidemiologic workforce with respect to preparedness and public health response. Finally, the AECs should strengthen the field of epidemiology overall simply by encouraging our practitioners to become more fully rounded in their professional skills and competencies, and by offering a standard description of the work of epidemiology, the core science of public health.

I encourage all epidemiologists to take a look at the product that CSTE and CDC have crafted. Think of how you might put this to use in your own career as well as in workplace practice, public health employment processes, and the training and education of our epidemiologic workforce to encourage the advancement of the profession of epidemiology and the careers of its practitioners.

The findings and conclusions in this article are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention.

REFERENCES

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