

Identifying Core Competencies in Doctoral-Level and Master- Level Epidemiological Training

Larissa R. Brunner Huber, Ph.D.

Kristopher Fennie, Ph.D.

Brett Ange, Ph.D.

Nicole Cook, Ph.D.

ACE Education Committee

Why look at competencies?

- Improve quality of educational programs by ensuring appropriate curricula
- Produce more effective epidemiologists
- Interest in developing competencies for various fields
 - > Medicine
 - > Public health
 - > Nursing

Prior efforts to identify competencies for epidemiology

- ACE/ASPH Workshop on Doctoral Education in Epidemiology (2002)
- ASPH MPH Core Competency Development Project (2006)
- CDC/CSTE Applied Epidemiologists in Governmental Public Health Agencies (2006)

“Gaps” in prior efforts

- Competencies only mention MPH degrees
 - > Are competencies for MSPH, MS in epidemiology same or different?
- Many competencies specific for working in government agency
 - > Are competencies same or different for other settings?

Overall goal

- To identify domains and core competencies for epidemiological training at doctoral and master levels

Step 1: On-line surveys

- Survey of “established” epidemiologists
 - > Demographic information
 - > Asked to rate importance of previously identified domains, competencies
 - Very important, important, neither important nor unimportant, unimportant, unsure
 - For MS, MSPH, MPH, and PhD, ScD, or equivalent
 - > Open-ended question asked if any other competencies not covered and important for graduate training in epidemiology

Step 1: On-line surveys

- Survey of recent graduates of epidemiology programs
 - > Demographic information
 - > Asked to indicate if identified domains, competencies very important or important to them since graduating and starting to work
 - > Asked if graduate program adequately prepared them in domain
 - Yes; no, had to ask mentors/co-workers for help; no, had to attend workshops/other educational offerings to gain proficiency; no, had to consult other outside resources
 - > Open-ended question asked if any other competencies not covered and important to them since graduating

Step 1: On-line surveys

- Assistance from ACE office staff to identify “established” epidemiologists
 - > Sample of members, fellows, emeriti, and honorary fellows
 - > Hoped to get individuals from variety of professional settings

Step 1: On-line surveys

- Assistance from ACE office staff to identify recent graduates
 - > Trickier!
 - > Used associate member list
 - Limited numbers
 - No good way to assess if current members are recent graduates
 - > Tried student organizations such as SER Student Caucus
 - But do not keep a list of alumni
 - > Reached out to Education Committee members to suggest additional potential participants
 - Recent graduates identified by several individuals working at universities, CDC

Step 1: On-line surveys

- ⦿ All individuals sent email from ACE Office inviting them to participate
- ⦿ Brief description of study, link to survey
- ⦿ Data collected from February to April 2009

Results: “Established” epidemiologists (n=147)

○ Age

- > < 35 years: 8.2%
- > 36-45 years: 20.4%
- > 46-55 years: 23.1%
- > 56-65 years: 32.7%
- > > 65 years: 15.6%

○ Sex

- > Female: 42.2%
- > Male: 57.1%
- > Missing: 0.7%

○ Setting of most recent job

- > Academic: 41.5%
- > Hospital: 12.9%
- > Government: 15.6%
- > Private research or industry: 8.2%
- > Other: 20.4%
- > Missing: 1.4%

Results: “Established” epidemiologists

◉ Degrees

- > MPH only: n=20
- > MPH + DrPH: n=8
- > MPH + PhD, ScD, or equivalent: n=32
- > MS only: n=8
- > MS + DrPH: n=1
- > MS + PhD, ScD, or equivalent: n=14
- > MS + PhD, ScD, or equivalent + DrPH: n=1
- > MSPH only: n=1
- > MSPH + DrPH: n=2
- > MSPH + PhD, ScD, or equivalent: n=3
- > DrPH only: n=2
- > PhD, ScD, or equivalent only: n=39
- > No formal training in epidemiology: n=16

Results: “Established” epidemiologists

- Competencies viewed as important, very important for all degrees
 - > Identifying public health problems
 - > Applying principles of good ethical, legal practice as related to study design, data collection, data use
 - > Managing, analyzing, summarizing data, drawing conclusions from data
 - > Using effective communication technologies
 - > Presenting data in tabular, figure form
 - > Searching literature
 - > Identifying data from existing sources
 - > Reviewing, critically evaluating literature
 - > Describing population by race/ethnicity, culture, etc.
 - > Producing descriptive epidemiology, understanding strengths and limitations of descriptive statistics
 - > Principles of screening, surveillance systems
 - > Identifying leading causes of death
 - > Understanding human subjects protection

Results: “Established” epidemiologists

- Competencies viewed as neither important nor unimportant, unimportant for all degrees
 - > Evaluating programs
 - > Using lab resources to support epidemiologic activities
 - > Establishing relationships with groups of special concern (e.g. groups subject to disparities, historically underrepresented groups)
 - > Implementing operational and financial plans
 - > Promoting organization’s vision in programs, activities
 - > Using performance measures to evaluate, improve epidemiology program effectiveness
 - > Promoting workforce development
 - > Preparing for emergency response

Results: “Established” epidemiologists

- Select competencies viewed as important, very important for doctoral level only
 - > Designing surveillance systems to include groups subject to health disparities
 - > Conducting investigations by using language, and other approaches tailored to population under study
 - > Recommending public health actions relevant to affected community
 - > Bringing epidemiologic perspective to development, analysis of public health policies
 - > Assisting in preparation of proposals for extramural funding
 - > Using management skills
 - > Identifying major gaps in knowledge
 - > Formulating original, key hypothesis
 - > Designing a study
 - > Identifying, minimizing sources of bias
 - > Using methods of measurement (designing data collection forms, determining validity of instrument, etc.)
 - > Examining data for presence of confounding, interaction

Results: “Established” epidemiologists

- ◉ Discrepancies with master-level competencies
 - > Numerous competencies viewed as important, very important for only certain master degrees

Select discrepancies

- Providing epidemiologic input into epidemiologic studies, public health programs, community public health planning processes at state, local, tribal level
 - > MS: 74%, MSPH: 59%, MPH: 51%
- Understanding general history of development of epidemiology
 - > MS: 62%, MSPH: 61%, MPH: 71%
- Understanding advantages, limitations of study designs to address specific problems
 - > MS: 69%, MSPH: 65%, MPH: 74%
- Interpreting, recognizing implications of research results
 - > MS: 67%, MSPH: 68%, MPH: 74%

Results: recent graduates (n=36)

○ Age

- > < 35 years: 58.3%
- > 36-45 years: 38.9%
- > 46-55 years: 2.8%

○ Sex

- > Female: 69.4%
- > Male: 30.6%

○ Setting of current job

- > Academic: 50.0%
- > Hospital: 13.9%
- > Private research or industry: 33.3%
- > Government: 0%
- > Missing: 2.8%

Results: recent graduates

◉ Degrees

- > MS + PhD: n=3
- > MS + MPH: n=1
- > MS + MPH + PhD: n=1
- > MSPH: n=2
- > MSPH + PhD: n=1
- > MPH: n=10
- > MPH + PhD: n=8
- > MPH + DrPH: n=1
- > PhD only: n=8

Results: recent graduates

- ◉ Domains master-level graduates felt less prepared in
 - > Assessments and Analysis (MS and MSPH)
 - > Basic Public Health Science (MS)
 - > Communication (MS and MSPH)
 - > Basic Knowledge of Leading Public Health Problems, History of Discipline (MSPH)
 - > Problem Conceptualization (MSPH)
 - > Data Collection and Monitoring (MS and MSPH)
 - > Study Design (MSPH)
 - > Data Management (MS and MSPH)
 - > Data Analysis (MSPH)

Results: recent graduates

- ◉ Domains PhD, ScD, or equivalent graduates felt less prepared in
 - > Basic Public Health Science
 - > Biology

Next Steps

○ Roundtable

- > What are the similarities and differences among MS, MSPH, and MPH degrees in epidemiology and are there different expectations for individuals receiving these degrees?
- > Do competencies differ by job setting (i.e. academic, hospital, government, and private research/industry settings)?
- > Contact information for individuals interested in taking part in Delphi process

Next Steps

- ◉ Delphi process
 - > Experts in field from variety of job settings
 - > Recent graduates
 - > Current graduate students
 - > Series of on-line surveys
 - Gather expert opinions
 - Synthesize opinions

Next Steps

- ◉ Disseminate results
 - > Annals of Epidemiology
- ◉ Teaching workshops

Questions?

Suggestions for individuals to take part in Delphi process?

- Larissa R. Brunner Huber
 - > lrhuber@uncc.edu
- Kristopher Fennie
 - > Kristopher.fennie@yale.edu