Development and use of the Biostatistics MPH Competencies Session 3364.1, Statistics Section

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Rationale

- Increasing accountability in higher education
- Proliferation of competency-based training
- Challenges of 21st century practice
- Recommendations by IOM, etc.
- Increasing incorporation of competencies into accreditation criteria
- Development of a voluntary credentialing exam

Workgroups' Charge

Each workgroup is to identify eight to ten sub-competencies (KSOs – knowledge, skills, and other characteristics) that are critical to indicating accomplishment of the core competency.

Aims

- An integrated set of core MPH competencies with:

  ➢ each of the five core areas, and

  ➢ an interdisciplinary, cross-cutting set of competency domains

- The set is intended to serve as a *resource* and *guide*

- ASPH will not prescribe the methods nor processes for assessing achievement

These are competencies that:

Every MPH student ought to be
able to demonstrate upon graduation
regardless of their major or area of
specialization.

Definition of Core MPH Degree Competencies

A unique set of applied knowledge, skills, and other attributes grounded in theory and evidence, for the broad practice of public health (ASPH, 2004)

Upon graduation, what must a student with an MPH:

- **Know**
- **Be able to do (technical and behavioral skills)**
- **Value/appreciate (affective attributes)**

Two-Phased Process

Phase 1 (2004-2005)

Discipline-specific Competency Identification and Specification

Phase 2 (2005-2006)

Cross-cutting Competency Identification and Specification

Phase 1 Workgroups & Chairs

- *Biostatistics:* Jack Barnette (UAB);
- *Environmental Health*: Mark Robson (UMDNJ);
- *Epidemiology:* Michel Ibrahim (JHU) and Michael Moser (Akron Health Department and NEOUCOM);
- *Health Policy and Management*: Peggy Leatt (UNC) and Diana Hilberman (UCLA);
- *Social and Behavioral Sciences*: Kenneth McLeroy (Texas A&M) and Bill Satariano (UC-Berkeley); and,
- *Public Health Biology*: Sharon Krag (JHU) and Kathy Miner (Emory).

Phase 1 Statistics

- **Involvement of ASPH faculty experts, practitioners, and program reps (n = 135)**

- **48 competencies in five discipline-specific areas**

- **Delphi response rate ranged from 72%-100% in the three rounds for each group (with a total average of 91%)**

Process in Brief for Phases 1 & 2

- Guided by 12 workgroups
- Total of 332 academic (both SPH and program reps) and practice participants
- Nominal group processes (modified *Delphi Technique*)
- Other field-wide reviews/inputs
- Integration by an expert panel (Core Competency Council) consisting of academic and practice partners
- Oversight by the ASPH Education Committee

Workgroup Process Report

- Workgroups formed in Sept – Nov. 2004 & Nov 2005

- First calls occurred Oct – Dec 2004 & 2005

- Three _modified_ Delphi rounds each

- At or close to 100% response rate for many rounds (total rate over all rounds = 88 %)

- Result: 48 Discipline-Specific comps and 70 Cross-Cutting Competencies (April 2006)

12 Core MPH Domains

- Discipline-specific Domains
  - Biostatistics
  - Environment Health Science
  - Epidemiology
  - Health Policy and Management
  - Social and Behavioral Sciences

12 Core MPH Domains (Contd.)

- Cross-cutting Domains
  - Communication and Informatics
  - Diversity and Culture
  - Leadership
  - Professionalism
  - Program Planning
  - Public Health Biology
  - Systems Thinking

Definition Used

Biostatistics is the development and application of statistical reasoning and methods in addressing, analyzing and solving problems in public health; health care; and biomedical, clinical and population-based research.

Biostatistics Competencies

Upon graduation a student with an MPH should be able to…

1. Describe the roles biostatistics serves in the discipline of public health.

2. Describe basic concepts of probability, random variation and commonly used statistical probability distributions.

3. Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met.

4. Distinguish among the different measurement scales and the implications for selection of statistical methods to be used based on these distinctions.

Biostatistics Competencies

Upon graduation a student with an MPH should be able to…

5. Apply descriptive techniques commonly used to summarize public health data.

6. Apply common statistical methods for inference.

7. Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question.

Biostatistics Competencies

Upon graduation a student with an MPH should be able to…

8. Apply basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation.

9. Interpret results of statistical analyses found in public health studies.

10. Develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences.

How these are being used

CEPH accreditation now requires that all degree programs be competency based

CEPH does not specify which competencies should be used

However, these are used in most of the accredited schools as the basis for competency development for the MPH

They can be modified by the program, others added, some deleted, some reworded

How these are being used

These are being incorporated into syllabi for introductory courses in biostatistics

This is in compliance with the need to show that course content and methods are related to competency development

Assessment methods in the class should also reflect assessment of competency attainment

How these are being used

The ASPH Competencies are the basis for the Content Validity Blueprint of the new NBPHE Exam that will be given for the first time August 2008

More Information

On the ASPH Competencies Project:

http://www.asph.org/document.cfm?page=851

On the NBPHE Exam:

http://www.publichealthexam.org/