

## Pathways to Careers in Public Health



Issues at the forefront  
of the National Board  
of Public Health Examiners  
and voluntary certification in public health

**Session 218666, November 8, 2010**  
**American Public Health Association**  
**Annual Meeting**  
**Denver, Colorado**

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No relationships to disclose

## Presented on behalf of the National Board of Public Health Examiners by

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## About the NBPHE

- independent non-profit organization
- includes representatives from a broad range of partner organizations
- Staff:
  - Executive Director, Molly Eggleston, CPH
  - Outreach Coordinator, Laura Biesiadecki, CPH

## Purpose of the Certified in Public Health exam

To ensure that students and graduates from schools and programs of public health accredited by the Council on Education for Public Health (CEPH) have mastered the knowledge and skills relevant to contemporary public health practice.

## Who takes the CPH Exam

Alumni from CEPH-accredited school or program; completed all degree requirements

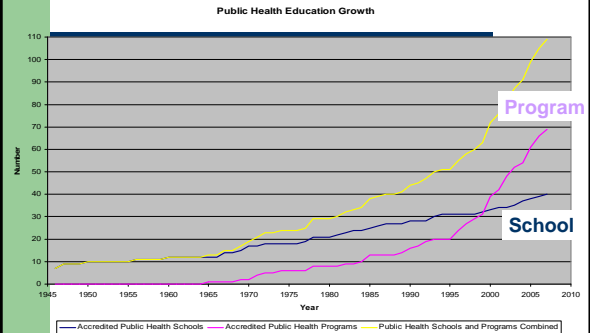
Student at CEPH-accredited school or a program participating in the NBPHE early exam administration; completed or concurrently enrolled in 21 credits

## CPH's...

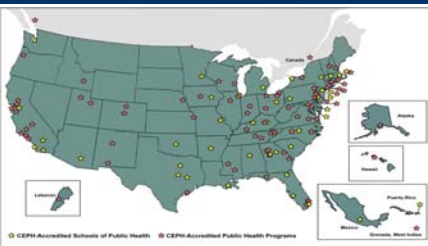
are public health professionals who represent all sectors and disciplines of public health.

Examinees are described by demographics and educational background

## Increase in number of graduates from CEPH-accredited institutions



## Schools and Programs of Public Health about two weeks ago



## Exam Development

NBPHE contracted with the National Board of Medical Examiners® (NBME) to develop the exam, including:

- Workshop to train test-item writers
- Workshop to review and validate pool of items
- Editing and validation of items to assure high quality
- Various approaches to develop metrics that permit a valid and fair examination

## What does the exam cover?

### Core & Cross-cutting domains

1. Biostatistics
2. Environmental Health Sciences
3. Epidemiology
4. Health Policy and Management
5. Social and Behavioral Sciences
6. ...



## Exam Validation and Scoring

The 2008 examinees became the standard reference group, n= 694.

Exams administered in subsequent years use this as the reference point for scoring.

Eventually, the exam will be re-standardized.

## Item Development

Original items were developed by an item writing team with expertise in the content and cross-cutting competency areas and submitted by mail to NBME (now submissions are done on a secure e-room connection).

These were reviewed and revised by the item writers in a live session.

## Item Development

After this review/revision process, items were reviewed by NBME staff and a draft exam was prepared.

This draft exam was reviewed by the Chair of the NBPHE Certification Examination Committee and the exam with 200 items was prepared for administration.

## Exam Administration

The 2008 exam was administered at any of approximately 300 Prometric Test Centers in the US, Puerto Rico, and Canada or 199 in other parts of the world.

Testing accommodations were available and used by 4 examinees

## Exam Validation – Key Validation

After the exams were scored, key validation included looking for items that did not perform in a satisfactory manner such as low number of correct responses (<30%) or a discrimination index that indicated the item was not “correlating” on the total test score

30 such items were identified

## Exam Validation – Key Validation

These items were reviewed by NBPHE committee members

Of the 30, 11 were retained and 19 were deleted

Thus, the standardization exam had 181 items

## Exam Validation - Equating

Equating the items was conducted based on a Rasch model of Item Response Theory (IRT) which equates the items by removing the effects of varying examinee proficiency from the estimated item difficulties

This is the basis for being able to use the 2008 exam results for standardized scoring of future exams

### Exam Validation – Score Re-Computation

Examinees scores were recomputed based on the item equating and were then converted into standard scores with a **mean of 500 and standard deviation of 101** (as close to 100 as was permitted by these data) in a similar way SAT, GRE, and other exam scores are standardized

### Exam Validation – Standard Setting

Standard setting is the process of determining the passing standard for the exam

A modified Angoff content-based standard setting procedure was used

Nine judges were asked to review each item in terms of their perception of the percent of “minimally competent” examinees would get the item correct

### Exam Validation – Standard Setting

Judges were asked to provide perceptions of:

1. the minimum percent of correct answers required for certification
2. the maximum percent of correct answers required for certification
3. the minimum acceptable overall percentage of failures for certification
4. the maximum acceptable overall percentage of failures for certification

### Then the magic of computer analysis..

provided the standard cut-score of 400 as the certified/not certified determination point

This standard score of 400 was then set as the standard certified/not certified determination point for subsequent exam administration until a new standardization process is conducted

### Exam Results and Reporting for 2008-2010 Administrations

The following slides provide results for the three administrations of the exams

For 2008 and 2009, the exam was given only to graduates

In 2010, the exam was given to graduates as well as pre-graduates in participating schools and programs (CPH awarded only upon actual graduation)

and example reports to examinees and programs

### Strong General Psychometric Properties

	Year	2008	2009	2010
KR20 Internal Consistency Reliability (Cronbach Alpha)		0.91	0.93	0.90
Mean Item Discrimination	*	0.31	0.34	0.30
Number of Items Deleted Prior to Scoring		19	15	9

\* Biserial correlation of item correct (1) or incorrect (0) and total exam score

## Ranking of Percent Correct by Area by Group Highest to Lowest Percent Correct

2008	2009	2010	
		Grad	Pre-GRAD
ENVHS	CRSCUT	EPID	EPID
HP&M	HP&M	ENVHS	ENVHS
CRSCUT	SBHS	SBHS	SBHS
SBHS	ENVHS	CRSCUT	CRSCUT
EPID	EPID	HP&M	HP&M
BIOS	BIOS	BIOS	BIOS

## General Pass Rates by Group

In 2008, Pass Rate > 80%  
 In 2009, Pass Rate ~ 74%  
 In 2010, Graduate Pass Rate ~ 88%  
 In 2010, Pre-Graduate Pass Rate ~ 85%

## Report to Examinee

**NBPHE** 2010  
 National Board of Public Health Examiners Certification Examination

**PERFORMANCE REPORT**

Name: \_\_\_\_\_ ID Number: \_\_\_\_\_

Decision: **Certified**  
 Total Test Score: 605 ← **Standard Score**

This report contains your total test standard score and your certification outcome obtained on this year's examination. The standard scores were calculated so that the mean and standard deviation for the base reference group were 500 and 100, respectively. The base reference group consisted of all examinees who took the 2008 Certification Examination. A total test score of 400 or greater was required to pass the Certification Examination. Additional information on your performance on the total test and the six areas of knowledge covered by the examination is provided below.

Content Area	Your Percent Correct Score	Total Group Mean Percent Correct Score (SD)	SEM
Total Test	76	66 (10)	3

## Report to Examinee, Percent Correct by Content Area

	Person Scores	Mean (SD)	Total Group
Biostatistics	71	58 (15)	7
Environmental Health Science	70	68 (11)	7
Epidemiology	85	71 (13)	7
Health Policy and Management	76	66 (12)	7
Social and Behavioral Sciences	74	67 (12)	7
Cross-cutting Competencies <sup>1</sup>	81	66 (12)	9

The table lists the total test and six content areas that comprise the Certification Examination. The second column shows your percent correct score on the total test and on each content area. The third column shows the mean percent correct score and standard deviation (SD) for each content area for all examinees who took this year's examination. The fourth column shows the standard error of measurement (SEM) of a score computation for each content area. The SEM provides information about the degree of uncertainty in examination scores and indicates how far a score is likely to vary from the examinee's true proficiency level. The SEM is used to calculate a score interval that indicates how much an examinee's score might vary across repeated testing using different sets of items covering the same content area. For example, an examinee with a true proficiency level of 73 on Biostatistics would be expected to achieve a percent correct score between 66 and 80 (73 - 7 and 73 + 7) on Biostatistics approximately 68% of the time. The SEM of the total test standard score is 30 standard score points.

*Congratulations on this noteworthy achievement!* You will receive a certificate recognizing your accomplishment and your name will be added to the NBPHE's list of Certified in Public Health professionals. Please visit the NBPHE exhibit booth at the annual American Public Health Association meeting for a special recognition of your accomplishment.

## Reporting to Schools and Programs

Schools and Programs with at least 10 examinees receive a report for results of their students.

For schools/programs with less than 10 students per year, the school/program may request aggregate pass/fail data for use in CEPH reporting, but specific students will not be identified.

Example Report follows:

## REPORT TO SCHOOL OR PROGRAM

**NBPHE** 2010  
 National Board of Public Health Examiners Certification Examination

**DEAN/PROGRAM DIRECTOR REPORT**

Program: \_\_\_\_\_

This report is designed to assist you as the dean or director of a CEPH-accredited school or program in determining relative strengths and weaknesses of the graduates and pre-graduates of your programs. For statistical reasons, reports are produced only for schools or programs with at least 10 graduates or 10 pre-graduates.

	Graduates in Your Program Mean (SD) (N=12)	All Graduates Mean (SD) (N=328)
Total Test Standard Score	537 (82)	513 (94)
Total Test Percent Correct Score	69 (8)	66 (10)

## REPORT TO SCHOOL OR PROGRAM

Content Area	Percent Correct Scores	School/Program	Total
Biostatistics	70 (14)		60 (16)
Environmental Health Science	69 (10)		68 (11)
Epidemiology	78 (11)		72 (14)
Health Policy and Management	66 (10)		66 (12)
Social and Behavioral Sciences	66 (9)		68 (12)
Cross-Cutting Competencies <sup>1</sup>	63 (13)		66 (12)

The table above lists information about the total test and the six content areas covered by the Certification Examination. The second and third columns show the mean and standard deviation of the standard score and percent correct score on the total test, as well as percent correct score on each content area for graduates in *your* program and *all* graduates taking this year's examination. The number of examinees is shown under the column heading. The total test standard score was calculated so that the mean and standard deviation for the base reference group were 500 and 100, respectively. The base reference group consisted of all 2008 examinees.

## Item Bank

With a robust and valid item bank of 1376 items, the NBPHE has been able to focus on maintenance of certification.

Seeking item writers for 2012 exam. If interested, suggest you contact your CEPH school dean or CEPH program director and ask to be nominated. Deadline for nominations is 11/19/10.

## Maintaining Certification



Maintenance of Certification =

50 hours of Continuing Education / 2 years

Re-assessment / 10 years

## New Initiatives

35 pilot sites in 2010  
79 in 2011 (including all 44 SPHs)  
Foundation to Advance Public Health through Certification (FAPHC), a 501c3 headquartered in PA

Employer support...

## Employer support for CPH process

- Allegheny County HD
- American Legacy Foundation
- American Public Health Association
- Association of Schools of Public Health
- Association of State & Territorial Health Officials
- California State University, East Bay
- Centers for Disease Control and Prevention
- Cherokee Nation Healthy Nation
- National Nursing Centers Consortium
- Nebraska Dept. Of Health & Human Services
- Public Health Management Corporation
- Richmond Behavioral Health Authority
- U.S. Department of Veteran's Affairs