

ASPHE Education Committee

**Master's Degree in Public Health
Core Competency Development
Project**

Version 2.3

October 2004 – August 2006

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I. Introduction to the Model

In 2004, the Association of Schools of Public Health (ASPH)¹ initiated the development of the enclosed masters in public health (MPH) Core Competency Model for students upon graduation.

Public health, as a profession and a discipline, focuses on population and society's role in monitoring and achieving good health and quality of life. Public health professionals work in many settings to guarantee:

- optimal human growth, development, and dignity across the life-span;
- air, food and water safety;
- workplace, school and recreation site safety;
- respect for community participation and preferences in health;
- timely detection of disease outbreaks and public health threats;
- science-based responses to public health problems;
- health care access, efficiency, and effectiveness;
- encouragement of healthy choices that prolong a high quality life; and,
- design and maintenance of policies and services to meet community and individual needs for physical and mental health.

Public health professionals also recognize the contributions of other disciplines, including but not limited to the health professions, Business, Economics, Education, Engineering, Law, Political Science, Psychology, Public Administration, and Sociology.

The MPH curriculum in graduate schools and programs of public health is organized around the five core disciplines of public health: Biostatistics, Epidemiology, Environmental Health Science, Health Policy and Management, and Social and Behavioral Sciences. Knowledge and skills in these disciplines equip the graduate to analyze and consider solutions to public health problems at the community, institutional, and societal levels. Graduates typically have concentrated in one of the core discipline areas, however some choose to focus their studies on particular population groups or subject areas such as maternal and child health, international health, mental health, or aging studies.

While the five discipline-specific competency domains have been generally accepted since the 1970s, the interdisciplinary/cross-cutting competencies in the six initial domains selected for the ASPH model – Communication and Informatics, Diversity and Culture, Leadership, Professionalism, Program Planning, and Systems Thinking – formerly lacked such consensus. However, since these six areas have become increasingly important to effective public health practice, they have been included with the five discipline-specific competency domains in the ASPH competency model development initiative. In addition, Public Health Biology² was added as a seventh domain to the interdisciplinary/cross-cutting core competencies.

These competencies are not designed to serve as a framework for certain required core courses or for one-to-one development of a core curriculum, but they are aimed at providing a baseline overview of the knowledge, skills, and other attributes expected of emerging public health professionals. The competencies are anticipated to serve as a useful guide for faculty to include, as appropriate, relevant content in their existing courses; as well as for MPH students to seek opportunities to comprehensively update their understanding.

¹ ASPH represents the 38 accredited schools of public health (SPH) in North America. Accredited SPH train a majority of public health professionals with a combined faculty of over 7,500. SPH educate more than 19,000 students annually from every state in the U.S. and most countries throughout the world and graduate over 6,000 professionals each year.

² Public Health Biology was included in this model in recognition that while historically the MPH curriculum had served to augment students' medical sciences degrees, contemporary reality in public health education programs demonstrates that most students enter into masters-level degree programs without a grounding in the biologic bases of health and illness. As a result there exists a gap between the historical and current backgrounds of students seeking the MPH degree. Public Health Biology competencies, therefore, serve to inform both faculty and students of the relevant biologic processes that influence population-based health.

II. Development Process

ASPH launched an initiative to develop an MPH Core Competency Model in 2004 as a result of the:

- Challenges of 21st century public health practice;
- Proliferation of competency-based training in the field of public health;
- Increased emphasis on accountability in higher education;
- Recommendations by important national organizations regarding competency domains in graduate public health education (GPHE);
- Increasing incorporation of competencies into accreditation criteria; and,
- Development of a voluntary credentialing exam for graduates of schools and programs in public health.

This final set of MPH core competencies covers the five areas of knowledge to basic public health, as required in the MPH degrees offered in Council on Education for Public Health (CEPH)-accredited programs and schools, as well as additional cross-cutting areas relevant to contemporary public health practice. It includes:

- Five core discipline-specific domains (Biostatistics, Environmental Health Sciences, Epidemiology, Health Policy Management, and Social and Behavioral Sciences); and,
- Seven interdisciplinary, cross-cutting domains (Communication and Informatics, Diversity and Culture, Leadership, Professionalism, Program Planning, Public Health Biology, and Systems Thinking)

The competencies are intended to serve as a *resource* and *guide* for those interested in improving the quality and accountability of public health education and training. They were developed with respect for the uniqueness and diversity of the schools of public health (SPH). They are not meant to prescribe the methods or processes for achievement, recognizing that implementation of the competencies may vary as a function of each school's mission and goals.

ASPH is disseminating the competencies to a wide audience beyond its member schools. In particular, it is anticipated that the competencies also could be useful to graduate public health programs, employers, practice and agency partners, CEPH, and the National Board of Public Health Examiners (NBPHE). Through this process, ASPH aims to fill the void that exists regarding an MPH core curriculum, and thus provide leadership in GPHE that will help define contemporary and future education in public health.

MPH core competencies are defined in this process as *a unique set of applied knowledge, skills, and other attributes (KSO's), grounded in theory and evidence, for the broad practice of public health* (ASPH, 2004).

The process, as described below, was split into two phases:

- Phase 1: Discipline-specific Competency Identification and Specification; and,
- Phase 2: Cross-cutting Competency Identification and Specification

PHASE 1 - Discipline-specific Competency Identification and Specification (October 2004 – December 2005)

Establishment of the Workgroups

In the Fall of 2004, the ASPH Education Committee established six workgroups, five in each of the five core public health areas -- Biostatistics, Environmental Health Sciences, Epidemiology, Health Policy and Management, and the Social and Behavioral Sciences -- along with a sixth group devoted to Public Health Biology. Each workgroup member was nominated by a dean or public health partner (the American Public Health Association, Association of State and Territorial Health Officials, and National Association of County and City Health Officials) from which a chair, or co-chairs, was selected to facilitate the group. The chairs were then asked to identify, from the nominees, a group of 10 content specialists to serve as members of the core workgroup. Additional nominees were invited to serve on resource groups that would provide additional review and input on drafts. Other interested individuals, such as ASPH council members and faculty members from programs in public health expressed interest in becoming involved in the process and were added to the resource groups. A total of 135 members participated in Phase 1.

The workgroups are composed of faculty, selected leaders from practitioner organizations and public health programs. The chairs are listed below:

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

Workgroup Mandate

Each workgroup was charged with coming to consensus on the top 8-10 *discipline-specific* competencies required by the typical MPH student, *regardless of area of specialization or intended career direction*, upon graduation. As an example, the set of Biostatistics competencies that emerged from the Biostatistics workgroup reflected the knowledge, skills, and other attributes that any MPH graduate must possess/exhibit whether she/he is specializing in any of the other core areas or specialty tracks such as Maternal and Child Health, Social and Behavioral Sciences, Global Health, etc.

Modified Delphi Process

Each workgroup used different methods to draft an initial list of universal competencies for subsequent review and consideration, however, ALL workgroups used a nominal group technique – a modified Delphi process-- to refine their draft competency lists. Three modified Delphi surveys were administered to each core workgroup. After each survey, core members discussed the results of the survey in order to distill and refine the next list of competencies. Each workgroup's resource group was included in the second round of each Delphi Process. Table 1 depicts the criteria for acceptance for each of the three rounds of modified-Delphi review process for each workgroup.

Table 1. Criteria for acceptance of each competency in the modified Delphi surveys:

Pre-Delphi Voting (only for SBS workgroup)	Delphi 1	Delphi 2	Delphi 3
1. Yes 2. No 3. Maybe	1. Accept 2. Accept with changes 3. Reject 4. Consider an alternative as noted below 5. If "accept with changes," how should it be reworded?	1. Accept 2. Reject 3. Accept with changes 4. If "accept with changes," how should it be reworded?	1. Accept 2. Reject 3. Final Comments (use the box below for comments)

In all three rounds of each survey, respondents had the opportunity to provide input by using a "General Comments" section.

The workgroups maintained open communication among members and with the public health community by publishing progress (conference call minutes and draft competency lists) on the ASPH website from Fall 2004 through Spring 2005. In addition, staff created a special e-mail box -- competency@asph.org -- in November 2004 to track input from members and from the public health community.

The specific numbers of competencies reviewed during each of the three rounds of modified-Delphi, as well as the reviewer response rate from the respective workgroup, are listed in Table 2. The average response rate was 91% in Phase 1.

Table 2: Workgroup-Specific Delphi Processes Summary

Steps Workgroups	Initial Action	Delphi 1		Delphi 2		Delphi 3		Final List	
		# of Comps	Response rate	# of Comps	Response rate	# of Comps	Response rate	Discipline-specific	Cross-cutting
Social and Behavioral Sciences (SBS)	Members drafted a COL/SBS matrix of 80 total comps for pre-Delphi voting*	41	81%	21	89%	11	72%	10	10
Biostatistics	Called for submissions of 5-10 broad comps from each member	30	81%	14	94%	9	100%	10	0
Environmental Health	Called for submission of at least 3 learning objectives from each member	17	100%	14	100%	9	100%	8	0
Epidemiology	Chairs distilled staff-developed "mega-list" of 400 comps	24	100%	15	92%	11	81%	10	2
Health Policy Management	Chairs developed a matrix of ASPH and COL comps	46	90%	50	92%	13	100%	10	2
Public Health Biology	Requested PH bio comps from all 36 SPH	55	81%	16	81%	10	100%	10	1
Total								58	15

* The SBS workgroup conducted a pre-Delphi voting process to trim an initial set of 80 competencies to a candidate list of 41 competencies to begin the modified Delphi 1 process.

An important component of the process occurred after the workgroups distilled a core set of MPH competencies in their discipline area, using expert panel discussions and the Delphi Process. A Core Competency Council (CCC), made up of the chairs of each of the workgroups and two practitioners, also drawn from the workgroups, reviewed the six sets that emerged from the discipline-specific workgroups.

The CCC was charged with integrating the disparate sets into a cross-cutting, interdisciplinary whole of MPH core competency domains to reflect the full range of knowledge, skills, and other attributes required for current and future public health practice. This overarching set was to constitute the interdisciplinary, cross-cutting competency domains for MPH education and training.

The council *initially* agreed to the following nine interdisciplinary domains:

- Communication;
- Data Analysis and Information Management;
- Diversity and Cultural Proficiency;
- Ecological Determinants of Health;
- Leadership;
- Management and Policy;
- Professionalism;
- Program Planning and Assessment; and,
- Systems Thinking.

Members of the CCC drafted a set of concepts to be addressed in these nine domains. Subsequently, staff and the project faculty advisor with expertise in competency model development refined the domain definitions and populated the domains with competencies drawn from the discipline-specific sets then filled gaps with competencies pulled from both competencies previously submitted by workgroup members and from the literature. This draft was reviewed by the CCC members via a modified Delphi Process and, subsequently, was presented at the Education committee meeting on May 10, 2005 as Version 1.0.

Based on the comments from the meeting participants and the Education Committee, the nine cross-cutting domains were revised and consolidated into six domains as follows:

- Communication;
- Diversity and Cultural Proficiency;
- Leadership;
- Professionalism and Ethics;
- Program Planning and Assessment; and,
- Systems Thinking.

Three of the original domains -- Data Analysis and Information Management, Ecological Determinants of Health, and Management and Policy -- were re-integrated into the pre-existing discipline-specific competency areas.

Deliverables

The draft set of the discipline-specific core competencies, "Version 1.0," was disseminated via the ASPH "Friday Letter" and the ASPH website to the membership and other stakeholders (practice and agency partners, etc.) for review and comment on May 6, 2005. The Education Committee Spring Meeting, held in Chicago on May 9-10, served as the venue for formal presentation of the first draft and for "town-hall" input into the process by members and key practice and other partners. Subsequently, the ASPH Education Committee considered comments and revised the set for presentation to the ASPH associate deans, at their June 2005 retreat, and to the ASPH deans, at their July 2005 retreat.

Subsequent iterations, “Version 1.1” (finalized on June 17), “Version 1.2” (finalized on July 15) were both disseminated widely for comments. This version was also presented to the deans at their retreat on July 21, 2005. Version 1.3, limited to the *discipline-specific competencies in the five basic public health science areas*, was finalized on November 23, 2005 and approved by the ASPH Education Committee on November 29, 2005. Version 1.3, with 48 competencies in five discipline-specific domains, was then approved by the ASPH board of directors on December 12, 2005.

PHASE 2 – Interdisciplinary/Cross-cutting Competency Identification and Specification (October 2005 – April 2006)

Establishment of Workgroups

In Phase 2, launched in the Fall of 2005, six new workgroups were formed to work on refining competencies under the six cross-cutting domains. The six cross-cutting domains were pre-populated with 5-8 competencies from literature and expert panel suggestions. All ASPH-member schools, the Association of Teachers of Preventive Medicine (ATPM), and practitioner organizations (the American Public Health Association, Association of State and Territorial Health Officials, and National Association of County and City Health Officials) were invited to nominate representatives to the cross-cutting domain workgroups. A total of 197 members participated in Phase 2.

The workgroups and the chairs are listed below:

- Communication: Dean John Finnegan (University of Minnesota SPH);
- Diversity and Cultural Proficiency: Dr. Joseph Telfair (UAB SPH);
- Leadership: Dean James Kyle (LLU SPH);
- Professionalism and Ethics: Dean Donna Petersen (USF CoPH);
- Program Planning and Assessment: Dr. Robert Goodman (Pittsburgh GSPH) and Dr. Sylvia Guendelman (UC-Berkeley SPH); and,
- Systems Thinking: Dr. Jim Porto (UNC SPH).

In Phase 2, the Public Health Biology workgroup was revitalized with new nominations from member schools and both academic and practice partners. This group was charged to identify additional illustrative examples that would provide more guidance to faculty and students.

Workgroup Mandate

As with the discipline-specific competency modeling process, each workgroup came to consensus on the top 8-10 competencies in the six cross-cutting domains deemed of importance for performance by the typical MPH student, regardless of area of specialization or intended career trajectory, upon graduation.

Methods

As in Phase 1, expert opinion was used to identify and refine the cross-cutting competencies. Modified Delphi surveys and expert panels were used to reach final consensus. During the process, the workgroups finalized the following domain names; as well as the definition for each:

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

During the process, the Communication workgroup members decided to include “Informatics” in their domain title and definition, as considerable number of Informatics competencies emerged as necessary for all MPH graduates. A small sub-group on “Informatics” worked under the Communication workgroup.

As an initial action, workgroup members were asked to submit 8-10 broad competencies under their workgroup domain. The specific numbers of competencies reviewed during each of the three rounds of modified-Delphi, as well as the reviewer response rate from the respective workgroup are listed in Table 3.

Table 3: *Workgroup-Specific Delphi Process summary*

Steps Workgroups	Delphi 1		Delphi 2		Delphi 3		Final List
	# of Comps	Response rate	# of Comps	Response rate	# of Comps	Response rate	Cross-cutting
<i>Communication and Informatics</i>	76	92%	18	90%	11	77%	10
<i>Diversity and Culture</i>	65	82%	21	65%	10	100%	10
<i>Leadership</i>	60	91%	31	86%	12	66%	9
<i>Professionalism</i>	41	100%	25	77%	14	80%	11
<i>Program Planning</i>	52	100%	28	66%	13	75%	10
<i>Systems Thinking</i>	58	100%	32	76%	14	100%	11
Total							61

The average response rate for the surveys was 85% in Phase 2. Similar to Phase 1, Phase 2 also included a Cross-Cutting Council (CCC) meeting in March. This meeting included chairs of the six cross-cutting areas, a Public Health Biology chair, a practice partner, a representative from ATPM, and a Phase 1 chair. The group discussed the rationale for each domain and finalized the competency model. During this meeting, Public Health Biology was also included as a cross-cutting domain.

A complete list of all competencies considered by the Phase 1 and Phase 2 workgroups during the vetting process is available at <http://www.asph.org/UserFiles/ALLCOMPSLIST.doc>. This listing may assist schools in identifying sub-competencies and specialty competencies that apply to the individual school and program missions. A list of resources is available at <http://www.asph.org/document.cfm?page=935>.

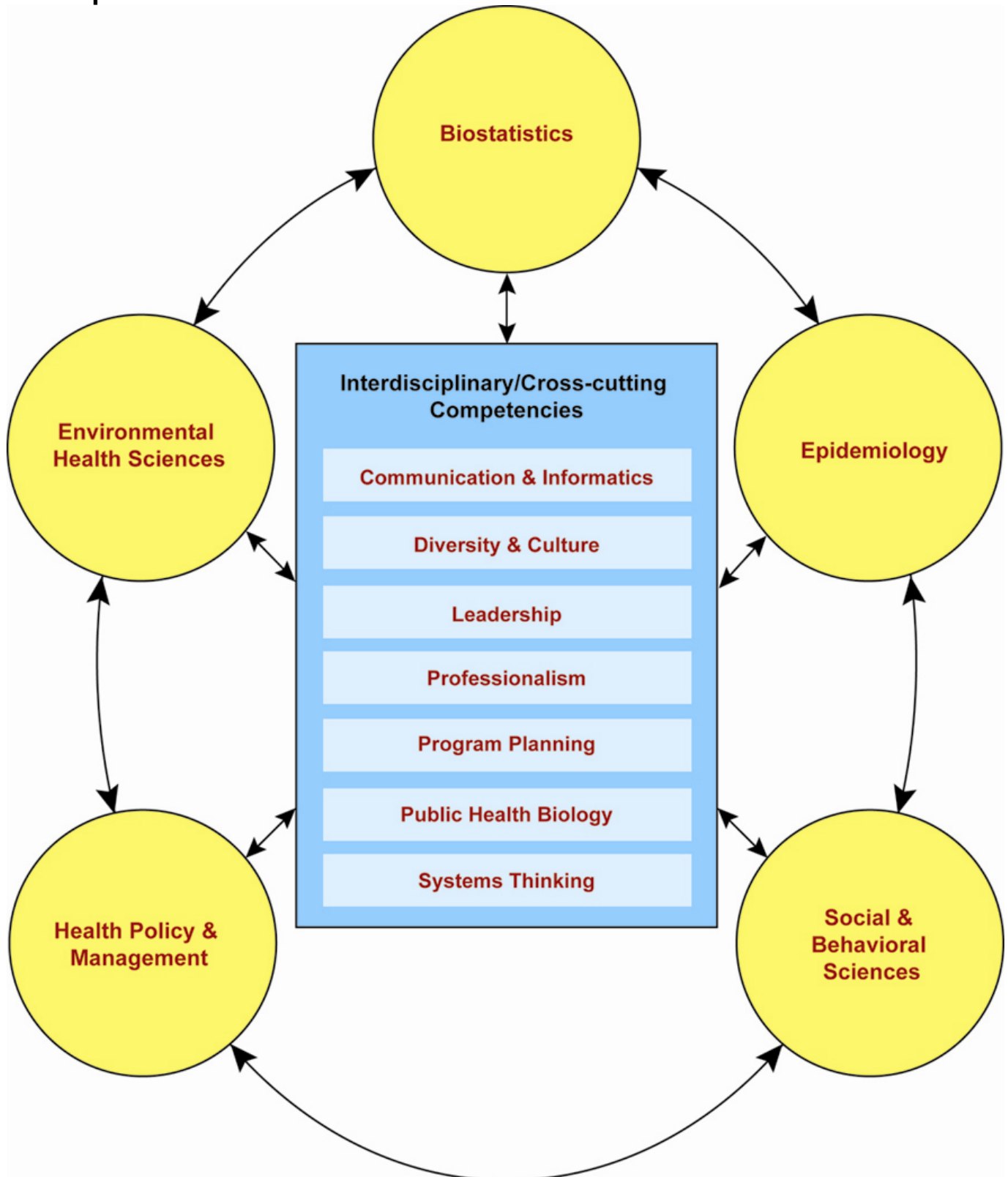
Plan for Finalizing Phase 2- Full Model Integration

The ASPH Education Committee reviewed the Phase 2 “Version 2.0” of the Model in April 2006, as well as in May 2006. Subsequently, “Version 2.1” was presented to the associate deans at their summer 2006 retreat in June. The deans reviewed Version 2.2 at their retreat in July. The ASPH Board Version 2.2 with minor revisions. These revisions are reflected in current version, “Version 2.3.”

The output of both Phase 1 and 2 is integrated to present a complete MPH core competency model. It is understood that competency sets generally have a lifespan of three to five years, and that it will soon be time to revisit the set for further refinement and updating in line with new thinking and future challenges to the field.

ASPH’s Core Competency Model “Version 2.3” is considered ASPH's best effort to date to define the core competencies for the MPH degree, fully realizing that competency model development is an iterative process – one that will have to be regularly updated based on: faculty deployment of the competencies; ongoing dialogue regarding use of the competencies; input on the currency and relevancy of the competency set(s); and ongoing changes and progress in field of public health.

III. Graphic Model



IV. Discipline-specific Definitions*

- **Biostatistics**

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.

- **Environmental Health Sciences**

Environmental health sciences represent the study of environmental factors including biological, physical and chemical factors that affect the health of a community.

- **Epidemiology**

Epidemiology is the study of patterns of disease and injury in human populations and the application of this study to the control of health problems.

- **Health Policy and Management**

Health policy and management is a multidisciplinary field of inquiry and practice concerned with the delivery, quality and costs of health care for individuals and populations. This definition assumes both a managerial and a policy concern with the structure, process and outcomes of health services including the costs, financing, organization, outcomes and accessibility of care.

- **Social and Behavioral Sciences**

The behavioral and social sciences in public health address the behavioral, social and cultural factors related to individual and population health and health disparities over the life course. Research and practice in this area contributes to the development, administration and evaluation of programs and policies in public health and health services to promote and sustain healthy environments and healthy lives for individuals and populations.

**Definitions are provided to define the context by which the workgroups' competency modeling development activities took place and are not intended to describe the entire field of the particular discipline's scholarship and practice.*

V. Interdisciplinary/Cross-cutting Definitions*

- **Communication and Informatics**

The ability to collect, manage and organize data to produce information and meaning that is exchanged by use of signs and symbols; to gather, process, and present information to different audiences in-person, through information technologies, or through media channels; and to strategically design the information and knowledge exchange process to achieve specific objectives.

- **Diversity and Culture**

The ability to interact with both diverse individuals and communities to produce or impact an intended public health outcome.

- **Leadership**

The ability to create and communicate a shared vision for a changing future; champion solutions to organizational and community challenges; and energize commitment to goals.

- **Professionalism**

The ability to demonstrate ethical choices, values and professional practices implicit in public health decisions; consider the effect of choices on community stewardship, equity, social justice and accountability; and to commit to personal and institutional development.

- **Program Planning**

The ability to plan for the design, development, implementation, and evaluation of strategies to improve individual and community health.

- **Public Health Biology**

Public health biology is the biological and molecular context of public health.

- **Systems Thinking**

The ability to recognize system level properties that result from dynamic interactions among human and social systems and how they affect the relationships among individuals, groups, organizations, communities, and environments.

**Definitions are provided to define the context by which the workgroups' competency modeling development activities took place and are not intended to describe the entire field of the particular discipline's scholarship and practice.*

VI. Discipline-specific Competencies

BIOSTATISTICS

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.

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.
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.
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.

Discipline-specific Competencies (*continued*)

ENVIRONMENTAL HEALTH SCIENCES

Environmental health sciences represent the study of environmental factors including biological, physical and chemical factors that affect the health of a community.

Competencies: Upon graduation a student with an MPH should be able to...

1. Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents.
2. Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards.
3. Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.
4. Specify current environmental risk assessment methods.
5. Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
6. Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures.
7. Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity.
8. Develop a testable model of environmental insult.

Discipline-specific Competencies (*continued*)

EPIDEMIOLOGY

Epidemiology is the study of patterns of disease and injury in human populations and the application of this study to the control of health problems.

Competencies: Upon graduation a student with an MPH should be able to...

1. Identify key sources of data for epidemiologic purposes.
2. Identify the principles and limitations of public health screening programs.
3. Describe a public health problem in terms of magnitude, person, time and place.
4. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
5. Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of epidemiologic data.
6. Apply the basic terminology and definitions of epidemiology.
7. Calculate basic epidemiology measures.
8. Communicate epidemiologic information to lay and professional audiences.
9. Draw appropriate inferences from epidemiologic data.
10. Evaluate the strengths and limitations of epidemiologic reports.

Discipline-specific Competencies (*continued*)

HEALTH POLICY AND MANAGEMENT

Health policy and management is a multidisciplinary field of inquiry and practice concerned with the delivery, quality and costs of health care for individuals and populations. This definition assumes both a managerial and a policy concern with the structure, process and outcomes of health services including the costs, financing, organization, outcomes and accessibility of care.

Competencies: Upon graduation a student with an MPH should be able to...

1. Identify the main components and issues of the organization, financing and delivery of health services and public health systems in the US.
2. Describe the legal and ethical bases for public health and health services.
3. Explain methods of ensuring community health safety and preparedness.
4. Discuss the policy process for improving the health status of populations.
5. Apply the principles of program planning, development, budgeting, management and evaluation in organizational and community initiatives.
6. Apply principles of strategic planning and marketing to public health.
7. Apply quality and performance improvement concepts to address organizational performance issues.
8. Apply "systems thinking" for resolving organizational problems.
9. Communicate health policy and management issues using appropriate channels and technologies.
10. Demonstrate leadership skills for building partnerships.

Discipline-specific Competencies (*continued*)

SOCIAL AND BEHAVIORAL SCIENCES

The social and behavioral sciences in public health address the behavioral, social and cultural factors related to individual and population health and health disparities over the life course. Research and practice in this area contributes to the development, administration and evaluation of programs and policies in public health and health services to promote and sustain healthy environments and healthy lives for individuals and populations.

Competencies: Upon graduation a student with an MPH should be able to...

1. Identify basic theories, concepts and models from a range of social and behavioral disciplines that are used in public health research and practice.
2. Identify the causes of social and behavioral factors that affect health of individuals and populations.
3. Identify individual, organizational and community concerns, assets, resources and deficits for social and behavioral science interventions.
4. Identify critical stakeholders for the planning, implementation and evaluation of public health programs, policies and interventions.
5. Describe steps and procedures for the planning, implementation and evaluation of public health programs, policies and interventions.
6. Describe the role of social and community factors in both the onset and solution of public health problems.
7. Describe the merits of social and behavioral science interventions and policies.
8. Apply evidence-based approaches in the development and evaluation of social and behavioral science interventions.
9. Apply ethical principles to public health program planning, implementation and evaluation.
10. Specify multiple targets and levels of intervention for social and behavioral science programs and/or policies.

VII. Interdisciplinary/Cross-cutting Competencies

COMMUNICATION AND INFORMATICS

The ability to collect, manage and organize data to produce information and meaning that is exchanged by use of signs and symbols; to gather, process, and present information to different audiences in-person, through information technologies, or through media channels; and to strategically design the information and knowledge exchange process to achieve specific objectives.

Competencies: Upon graduation, it is increasingly important that a student with an MPH be able to...

1. Describe how the public health information infrastructure is used to collect, process, maintain, and disseminate data.
2. Describe how societal, organizational, and individual factors influence and are influenced by public health communications.
3. Discuss the influences of social, organizational and individual factors on the use of information technology by end users.
4. Apply theory and strategy-based communication principles across different settings and audiences.
5. Apply legal and ethical principles to the use of information technology and resources in public health settings.
6. Collaborate with communication and informatics specialists in the process of design, implementation, and evaluation of public health programs.
7. Demonstrate effective written and oral skills for communicating with different audiences in the context of professional public health activities.
8. Use information technology to access, evaluate, and interpret public health data.
9. Use informatics methods and resources as strategic tools to promote public health.
10. Use informatics and communication methods to advocate for community public health programs and policies.

Interdisciplinary/Cross-cutting Competencies (continued)

DIVERSITY AND CULTURE

The ability to interact with both diverse individuals and communities to produce or impact an intended public health outcome.

Competencies: Upon graduation, it is increasingly important that a student with an MPH be able to...

1. Describe the roles of, history, power, privilege and structural inequality in producing health disparities.
2. Explain how professional ethics and practices relate to equity and accountability in diverse community settings.
3. Explain why cultural competence alone cannot address health disparity.
4. Discuss the importance and characteristics of a sustainable diverse public health workforce.
5. Use the basic concepts and skills involved in culturally appropriate community engagement and empowerment with diverse communities.
6. Apply the principles of community-based participatory research to improve health in diverse populations.
7. Differentiate among availability, acceptability, and accessibility of health care across diverse populations.
8. Differentiate between linguistic competence, cultural competency, and health literacy in public health practice.
9. Cite examples of situations where consideration of culture-specific needs resulted in a more effective modification or adaptation of a health intervention.
10. Develop public health programs and strategies responsive to the diverse cultural values and traditions of the communities being served.

Interdisciplinary/Cross-cutting Competencies (continued)

LEADERSHIP

The ability to create and communicate a shared vision for a changing future; champion solutions to organizational and community challenges; and energize commitment to goals.

Competencies: Upon graduation, it is increasingly important that a student with an MPH be able to...

1. Describe the attributes of leadership in public health.
2. Describe alternative strategies for collaboration and partnership among organizations, focused on public health goals.
3. Articulate an achievable mission, set of core values, and vision.
4. Engage in dialogue and learning from others to advance public health goals.
5. Demonstrate team building, negotiation, and conflict management skills.
6. Demonstrate transparency, integrity, and honesty in all actions.
7. Use collaborative methods for achieving organizational and community health goals.
8. Apply social justice and human rights principles when addressing community needs.
9. Develop strategies to motivate others for collaborative problem solving, decision-making, and evaluation.

Interdisciplinary/Cross-cutting Competencies (continued)

PUBLIC HEALTH BIOLOGY

The ability to incorporate public health biology – the biological and molecular context of public health – into public health practice.

Competencies: Upon graduation, it is increasingly important that a student with an MPH be able to...

1. Specify the role of the immune system in population health.
2. Describe how behavior alters human biology.
3. Identify the ethical, social and legal issues implied by public health biology.
4. Explain the biological and molecular basis of public health.
5. Explain the role of biology in the ecological model of population-based health.
6. Explain how genetics and genomics affect disease processes and public health policy and practice.
7. Articulate how biological, chemical and physical agents affect human health.
8. Apply biological principles to development and implementation of disease prevention, control, or management programs.
9. Apply evidence-based biological and molecular concepts to inform public health laws, policies, and regulations.
10. Integrate general biological and molecular concepts into public health.

Public Health Biology Illustrative Sub-competencies are available at <http://www.asph.org/document.cfm?page=928>.

Interdisciplinary/Cross-cutting Competencies (continued)

PROFESSIONALISM

The ability to demonstrate ethical choices, values and professional practices implicit in public health decisions; consider the effect of choices on community stewardship, equity, social justice and accountability; and to commit to personal and institutional development.

Competencies: Upon graduation, it is increasingly important that a student with an MPH be able to...

1. Discuss sentinel events in the history and development of the public health profession and their relevance for practice in the field.
2. Apply basic principles of ethical analysis (e.g. the Public Health Code of Ethics, human rights framework, other moral theories) to issues of public health practice and policy.
3. Apply evidence-based principles and the scientific knowledge base to critical evaluation and decision-making in public health.
4. Apply the core functions of assessment, policy development, and assurance in the analysis of public health problems and their solutions.
5. Promote high standards of personal and organizational integrity, compassion, honesty and respect for all people.
6. Analyze determinants of health and disease using an ecological framework.
7. Analyze the potential impacts of legal and regulatory environments on the conduct of ethical public health research and practice.
8. Distinguish between population and individual ethical considerations in relation to the benefits, costs, and burdens of public health programs.
9. Embrace a definition of public health that captures the unique characteristics of the field (e.g., population-focused, community-oriented, prevention-motivated and rooted in social justice) and how these contribute to professional practice.
10. Appreciate the importance of working collaboratively with diverse communities and constituencies (e.g. researchers, practitioners, agencies and organizations).
11. Value commitment to lifelong learning and professional service including active participation in professional organizations.

Interdisciplinary/Cross-cutting Competencies (continued)

PROGRAM PLANNING

The ability to plan for the design, development, implementation, and evaluation of strategies to improve individual and community health.

Competencies: Upon graduation, it is increasingly important that a student with an MPH be able to...

1. Describe how social, behavioral, environmental, and biological factors contribute to specific individual and community health outcomes.
2. Describe the tasks necessary to assure that program implementation occurs as intended.
3. Explain how the findings of a program evaluation can be used.
4. Explain the contribution of logic models in program development, implementation, and evaluation.
5. Differentiate among goals, measurable objectives, related activities, and expected outcomes for a public health program.
6. Differentiate the purposes of formative, process, and outcome evaluation.
7. Differentiate between qualitative and quantitative evaluation methods in relation to their strengths, limitations, and appropriate uses, and emphases on reliability and validity.
8. Prepare a program budget with justification.
9. In collaboration with others, prioritize individual, organizational, and community concerns and resources for public health programs.
10. Assess evaluation reports in relation to their quality, utility, and impact on public health.

Interdisciplinary/Cross-cutting Competencies (continued)

SYSTEMS THINKING

The ability to recognize system level properties that result from dynamic interactions among human and social systems and how they affect the relationships among individuals, groups, organizations, communities, and environments.

Competencies: Upon graduation, it is increasingly important that a student with an MPH be able to...

1. Identify characteristics of a system.
2. Identify unintended consequences produced by changes made to a public health system.
3. Provide examples of feedback loops and “stocks and flows” within a public health system.
4. Explain how systems (e.g. individuals, social networks, organizations, and communities) may be viewed as systems within systems in the analysis of public health problems.
5. Explain how systems models can be tested and validated.
6. Explain how the contexts of gender, race, poverty, history, migration, and culture are important in the design of interventions within public health systems.
7. Illustrate how changes in public health systems (including input, processes, and output) can be measured.
8. Analyze inter-relationships among systems that influence the quality of life of people in their communities.
9. Analyze the effects of political, social and economic policies on public health systems at the local, state, national and international levels.
10. Analyze the impact of global trends and interdependencies on public health related problems and systems.
11. Assess strengths and weaknesses of applying the systems approach to public health problems.

More information about Systems Thinking is available at <http://www.asph.org/document.cfm?page=898>.

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