Competencies for Global Health Graduate Education

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INTRODUCTION

The multitude of social, political, technological, and economic forces currently fueling globalization (Box 1) are also driving the current unprecedented interest and growth in world health, health education and promotion, and global workforce development (Box 2). These inflection points have drawn attention to the many imperatives and priorities for the expansion of workforce development and capacity-building, both within and across nations. Long-standing professional and geographic differences in education and training programs, licensure/certification standards, and roles and specialization requirements, however, have compromised national and international health education agenda setting. Equally impacted has been consensus building regarding the development of educational standards across the professions. Despite the repeated calls for collaboration and interprofessional education, little progress has been achieved to date in relation to these goals even within regions and individual countries. In the United States specifically, the silo-based and variable educational approaches across the health professions at large and the related

KEYWORDS

• Global health • Competencies • Public health • Graduate education

Health is a necessary prerequisite for a harmonious, productive, prosperous, and peaceful world. It is indeed central to the aspiration of the world’s people and of their governments and as such health is a global priority.

—T. Shilton, 2009

doi:10.1016/j.idc.2011.02.015
id.theclinics.com
0891-5520/11/$ – see front matter © 2011 Published by Elsevier Inc.
specializations have been highlighted in all 3 of the Institute of Medicine committee reports addressing the quality chasm related to health care.5–7

The call for educational transformation across health professions in the United States has been uniform and resounding by leaders and researchers in educational and workforce development, foundations, health professions commissions, and professional organizations.8–13 In addition, several international conferences and forums have promoted widespread engagement, ownership, and collaboration in

<table>
<thead>
<tr>
<th>Box 1</th>
<th>Forces of globalization</th>
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<tbody>
<tr>
<td>• Greater international connectedness and interdependence</td>
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<td>• Intensification of a competitive global marketplace</td>
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<td>• Expansion of flows across countries (resources, people, goods, information, innovations)</td>
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<td>• Escalation of dependency on intellectual capital and innovation for productivity and growth</td>
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<td>• Greater focus on the role of prevention in health</td>
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<td>• Increased threats of infectious disease outbreaks, natural disasters, unintentional man-made disasters, and biological and terrorist attacks</td>
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<td>• Heightened public visibility of a global health agenda</td>
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<td>• Societal demand and movements for greater global equity</td>
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<td>• Incremental potential for global conflict and loss of security</td>
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Box 2 Drivers of interest and growth in global health

- Increased opportunities for traveling, living, studying, and working around the world
- Innovations in information technology and communication
- Ease of communication and travel
- Emphasis on internationalization facilitated by global media
- Heightened public awareness as a matter of US foreign policy
- Greater student interest around the world regarding issues affecting health, health care, and health services
- Growing belief that health is a basic human right and a moral imperative
- New demand among undergraduates, graduate, and professional students for education and training experiences aligned with marketplace factors
- Proliferation of schools of public health across the globe, including increased global health degree-granting and certification programs
- Internationalization of health and education, expansion of free-standing institutes and centers focusing on global health and the promotion of health
- Enlightened self-interest and global health investment by the American public
- New donors with unprecedented levels of funding for global health and related areas of workforce development, research, and discovery
- Social justice movements on campuses: increased student compassion and activism fueled by world conflicts and health challenges
- Expansion of global health disciplinary frameworks beyond the health professions
global health, including the World Health Organization and the United Nations. The 2009 Galway Consensus Conference, stressed greater international collaboration in the development of global health workforce capacity and competencies. In early 2010, a subset of the Association of Schools of Public Health (ASPH) Global Health Committee sought to dissolve the dichotomies drawn by prior groups among global health, international health, and public health by publishing a statement asserting that “global health and public health are indistinguishable.” Later in 2010, a global commission of professional and academic leaders called for major reform in the training of doctors and other health care professionals to equip them for the 21st century. The commission’s report, titled Health Professionals for a New Century: Transforming Education for Health Systems in an Interdependent World, was published in *The Lancet*, enabling it to reach a wide, global audience. Related outcomes and calls from these meetings included (1) the building of shared visions; (2) catalyzing change leaders; (3) launching advocacy and dissemination action plans regarding global health education; and (4) gaining consensus on future collaborative strategies and actions for ensuring quality in education, training, and practice. Global competencies are clearly viewed as essential for global realization of these goals and global health success overall. However, existing variabilities in the development of competencies and related educational initiatives within countries and regions have been further impacted by the current economic landscape. Therefore, it is unlikely that these ambitions for educational and workforce transformation will be realized in time to influence the United Nations’ 2015 Millennium Development Goals.

To date there is a modicum of information regarding the development of competency models, standards setting, and specific deployments of competency-based educational program development in the health professions, both regionally and internationally. As depicted by the S curve for the adoption and use of educational transformation adapted from Rogers’ framework for the diffusion of innovations, many of the educators and trainers across the entire spectrum of the global health workforce are just starting the introductory stage (phase I) of the competency journey (Fig. 1). In contrast, newer early adopters in some professions, oversight organizations, and countries have moved beyond debating the well-established theoretical underpinnings and merits of this evolving educational movement. These innovators are progressing in the development of competency models that serve as the basis for elevating workforce development across all levels, including university and college-based students. Sponsors of the competency movement clearly view it as an essential educational transformation for ensuring the skills and readiness of current trainees and students in world-health settings. However, other than the Centers for Disease Control and Prevention Global Health Core Competencies and the University of Washington School of Public Health’s competency listing for their master of public health (MPH) scholars, no other models could be found in the literature specifically addressing the development of a competency model as a driver for leading international or global health education initiatives.

This article provides a brief overview of the competency-based education (CBE) movement and its impact on graduate health professions education in the United States to date. In addition, a description is provided of the current Association of Schools of Public Health (ASPH) initiatives focused on CBE and the development of a standardized global health competency model targeted at master-level students majoring in global health. These endeavors and evolving lessons serve as the basis for subsequent review and discussion regarding the evolving inflection points influencing health professions education. In addition, recommendations addressing the potential future directions in graduate health professions education are provided. Collective understanding of
both current macro-environmental and micro-environmental forces and future trends is essential for developing broader and more inclusive visions for a better future and the critical strategies and actions for the realization of global health.

CURRENT STATUS OF THE US COMPETENCY MOVEMENT IN GRADUATE LEVEL HEALTH PROFESSIONS EDUCATION

During the past decade, several competency models have been developed to guide health professions education and training across the wide array of professional roles, generalist and specialty positions, and postsecondary education programs both nationally and internationally.26–28 Table 1 provides a listing of exemplar graduate education competency modeling efforts in the United States to date that have been documented in the published literature. Other initiatives have been developed or are in current development in relation to national health and security agendas, specialty education and training programs, and individual graduate programs at various universities and colleges. However, at this writing, the specific status, potential linkages to global health, and level of education targeted for these efforts are not currently available via public search modalities. Many of these efforts to date are known to exist but have not been shared in the formally published literature.

The majority of the models listed in Table 1 were initiated and supported by their professional associations or accrediting organizations wishing to identify the core capabilities that practitioners entering the global health workforce would need for effective practice in the decade ahead. The US Department of Education's
outcomes-based educational initiatives (specifically those related to higher education and professional credentialing) have also influenced the movement at the graduate school level.\textsuperscript{30–34} As a result, many of the accrediting and certification bodies overseeing standards for health professions educational practices and policies have required, or will soon be requiring, the identification of a specific evidenced-based competency model for guiding future program development.\textsuperscript{35–37} Competency models are increasingly being viewed as an essential prerequisite for aligning educational program missions and vision with the types and skills of students entering their programs and the marketplaces where their students will be placed upon graduation. In addition, in line with evolving adult- and lifelong-learning principles and educational best practices, scientifically-developed and validated competency models will become the norm for directing future pedagogy, including the development and deployment of learning and assessment methods across graduate programs (Fig. 2).

As noted earlier, CBE deployment remains in the earliest phase for diffusion, with many barriers to its universal acceptance and widespread use. The majority of the barriers are those associated with faculty trial and evaluation, which occurs during the second phase of diffusion. Most faculties today received their graduate education during the golden decades of passive student learning, within the context of a faculty-centric paradigm. As a result, many faculty teach by transferring knowledge, predominantly through lecturing and discussion methods, versus contemporary action-based learning methods. They received their teaching positions based on their specialized knowledge base and research acumen, with little or no grounding in pedagogical principles. In addition, given the reward system in higher education today with a primary emphasis on research productivity, there are few incentives for investing in teaching enhancement, nor is there interest in seeking out assistance from educational specialists or campus centers on excellence in teaching. Hence, many faculty remain more comfortable with lecturing modalities given the associated efficiencies for effort expended after initial course development.

Today’s students, in contrast, are far more predisposed to the specificity and transparency afforded them in CBE. Given the economic challenges of the past decade, there is significant ambiguity regarding future employment options for the current generation of graduate students. Today’s graduates are focused on their future and optimizing their potential differentiation for the work marketplaces they will be entering. They are demanding greater returns on investments than students in prior generations. In addition, they want to know how their capabilities will be enhanced through all of their learning experiences. The more relevant and similar students’ educational experiences are to their future work roles, the greater their perceived preparation and readiness upon graduation. They want to be fully informed regarding what they are going to learn and achieve, the methods for such, the timeframe, and the match among the performance expectations, the learning methods, and the evaluation processes used.\textsuperscript{38,39}

Without professional organizations, accrediting bodies, and school-wide leadership and championing of CBE, preliminary research findings indicate that most faculty would not be predisposed to adopting the associated methodologies, thereby remaining at phase I, or early entry into phase II, of the S curve of the diffusion process for this movement.\textsuperscript{5,9}

\textbf{Current Association of Schools of Public Health Competency Initiatives}

\textbf{Survey of competency-based education practices}

In 2009, the ASPH Education Committee sponsored a faculty-student survey of the state of competency-based educational practices and challenges across US schools
## Table 1
Published graduate-level health professions competency models in medicine, nursing, pharmacy, public health, and interprofessional education

<table>
<thead>
<tr>
<th>Model (Sponsor)</th>
<th>Year</th>
<th>Domains/Other</th>
<th>Number Competencies</th>
<th>Number Subcompetencies</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accreditation Council for Graduate Medical Education Competencies (ACGME)</td>
<td>2002</td>
<td>6</td>
<td>24</td>
<td>—</td>
<td>Graduate medical education programs</td>
</tr>
<tr>
<td>Expected Outcomes and Curricular Elements of PhD Programs in Nursing (American Association of Critical Care Nurses Task Force on Research-Focused Doctorate in Nursing)</td>
<td>2010</td>
<td>3</td>
<td>17</td>
<td>—</td>
<td>PhD nursing graduates</td>
</tr>
<tr>
<td>Professional Pharmacists Competencies (Accreditation Council for Pharmacy Education)</td>
<td>2007</td>
<td>3 professional competencies</td>
<td>10</td>
<td>2</td>
<td>Graduate of pharmacy degree programs</td>
</tr>
<tr>
<td>Clinical Pharmacists Competencies (American College of Clinical Pharmacy)</td>
<td>2008</td>
<td>5</td>
<td>18</td>
<td>65</td>
<td>Clinical pharmacists</td>
</tr>
<tr>
<td>Doctor of Public Health Core Competency Model (Association of Schools of Public Health)</td>
<td>2007–2009</td>
<td>7</td>
<td>54</td>
<td>—</td>
<td>DrPH graduates</td>
</tr>
<tr>
<td>Master of Public Health Core Competency Model (Association of Schools of Public Health)</td>
<td>2004–2006</td>
<td>5 discipline-specific 7 cross-cutting</td>
<td>119</td>
<td>—</td>
<td>MPH program faculty and MPH graduates</td>
</tr>
<tr>
<td>Competency Model</td>
<td>Year</td>
<td>Level</td>
<td>Description</td>
<td></td>
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<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>Public Health Preparedness &amp; Response Core Competency Model</td>
<td>2010</td>
<td>Mid-level</td>
<td>Mid-level public health workers (including MPH equivalent or higher degree, plus 5 years in the workforce)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Competence Education for Students in Medicine and PH</td>
<td>2010 draft</td>
<td>Medical and PH students</td>
<td>Medical and PH students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Health Competencies</td>
<td>2008–2009</td>
<td>Global health workforce at all levels</td>
<td>Global health workforce at all levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core Competencies for Public Health Professionals/ (Council on Linkages)</td>
<td>2009–2010</td>
<td>Entry level professional, managers, supervisors, senior managers/leaders</td>
<td>Entry level professional, managers, supervisors, senior managers/leaders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competencies of Health Educators (National Commission for Health Education Credentialing)</td>
<td>2010</td>
<td>Health education specialists</td>
<td>Health education specialists</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bioterrorism and Preparedness (Columbia University)</td>
<td>2002</td>
<td>PH workers targeted for bioterrorism and emergency-readiness training</td>
<td>PH workers targeted for bioterrorism and emergency-readiness training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interdisciplinary Interprofessional Education Competencies (Interprofessional Education Collaborative)</td>
<td>2011</td>
<td>Allopathic medicine, dental, nursing, osteopathic medicine, pharmacy, and public health students pre-licensure/pre-certification</td>
<td>Allopathic medicine, dental, nursing, osteopathic medicine, pharmacy, and public health students pre-licensure/pre-certification</td>
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**Abbreviations:** AACN, American Association of Critical Care Nurses; DrPH, Doctor of Public Health; PH, public health.

of public health. A 30-item survey was sent to dean-appointed informants at all 2009 accredited US schools of public health (N = 40). The survey addressed 5 key areas: (1) faculty and student reactions to CBE in general and the MPH competency model specifically; (2) the school’s approaches to dissemination, championship, and resourcing of the model; (3) strategies for promoting and increasing the awareness of the model; (4) implementation of the model in the curriculum, including the perceived adequacy of the core competencies for MPH graduates, the extent of faculty development for teaching the competencies, the degree to which course teaching and evaluation methods align with the competencies, and barriers to implementation; and (5) the state of current curricular innovation by the schools. Details regarding the findings from the study were presented at the fall 2009 annual meeting of ASPH.\textsuperscript{40} Ninety-three percent of the accredited schools (N = 37) responded to the survey. In general, key findings included:

High levels of faculty familiarity with the model $\bar{x} = 3.7$ on a 4 point Likert scale, with less familiarity among the students ($\bar{x} = 2.6$)

Equal moderate levels of support across faculty and students regarding ($\bar{x} = 2.8$ and $\bar{x} = 3.1$ respectively): the value of CBE principles by faculty and students, and model coverage of key skills
Dean’s offices and curriculum committees serving as the primary champions for competency-based educational changes
Satisfaction with the resources provided for integration of the model
Deployment of a variety of implementation strategies, including mapping of competencies to specific program curricula and alignment of teaching and evaluation methods with the competencies
Greater perceived adequacy and implementation of the discipline-specific competencies than the cross-cutting competencies
Faculty predispositions, including lack of faculty interest in, awareness of, and time for CBE principles/methods, as key barriers to implementation.

Respondents also uniformly cautioned that not enough time had elapsed for full deployment of the model and associated CBE initiatives. Findings from this survey parallel many of those found in relation to the only known multi-school analysis of graduate health professions competency-based curriculum development and integration initiatives. The findings provide additional information regarding (1) the level of faculty engagement in CBE and resistance to change and (2) evidence of the types and levels of assistance required for adequate implementation—if the benefits of CBE are to be fully realized.

ASPH Global Health Competencies Model Development Project and Related Research

Advance survey
At the fall 2008 ASPH annual conference, members of the Global Health Committee discussed the increasing interest in and development of both international and global health degree and certificate programs in the United States. In February, 2009, the ASPH Global Health Committee continued these discussions, stimulated by the rapidly changing global health landscape and threats, as well as global health-related infrastructure changes underway at many leading universities. Committee members generally agreed on the increasing recognition of public health as the heart of global health. Barriers to the promotion of this perspective, however, included: (1) a lack of consensus on core global health competencies expected of master-level students, and (2) varying levels of global health instruction and practicums for students across the universities and programs providing international and global health educational experiences.

Based on the February Global Health Committee retreat discussions, members decided to develop a set of core competencies for students specializing in global health at the graduate level across US programs. In preparation for the launch of model development, ASPH initiated a survey in the summer of 2009 to determine the extent to which international and global health programs and competencies were established across 40 US schools of public health. Twenty-five (63%) of the schools responded that they did have competency sets or models guiding internal or global health program planning and conduct. Of these responding schools, 20 (80%) provided copies of their specified global health program competencies. An analysis of these competencies revealed the findings outlined in Table 2. One school (#13) was eliminated from the final analysis as their submission addressed goals of the program, rather than actual behaviorally-stated expectations for specific student learning outcomes—competencies.

As noted in Table 2, there is great variability across the 20 schools that submitted a listing of their competencies. In some cases, the statements regarding their perceived competencies were more similar to instructional learning objectives versus
<table>
<thead>
<tr>
<th>School #</th>
<th>Type of Program</th>
<th>Master</th>
<th>Doctoral</th>
<th># Domains/Other Categories</th>
<th># Competencies/Other Categories</th>
<th>Taxonomic Domain &amp; Level</th>
<th>Selection/Development Process</th>
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<tbody>
<tr>
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<td></td>
<td>Cognitive</td>
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<tr>
<td>1</td>
<td>Master</td>
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<td>✔</td>
<td>10</td>
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<td>✔</td>
<td>4 tracks of study</td>
<td>6</td>
<td>6</td>
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<td>3</td>
<td>Master</td>
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<td>62</td>
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<td>5</td>
<td>Master</td>
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<td>✔</td>
<td>6 tracks</td>
<td>42</td>
<td>39</td>
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<td>6</td>
<td>Master</td>
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<td>✔</td>
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<td>6</td>
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<td>7</td>
<td>Master</td>
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<td>✔</td>
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<td>13</td>
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<td>9</td>
<td>6</td>
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<td>13</td>
<td>Master</td>
<td>✔</td>
<td>✔</td>
<td>–</td>
<td>3 program goals&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>14</td>
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<td>✔</td>
<td>–</td>
<td>6</td>
<td>57</td>
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<td>15</td>
<td>Master</td>
<td>✔</td>
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<td>6</td>
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<td>16</td>
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<td>✔</td>
<td>–</td>
<td>8 program objectives</td>
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<td>8&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>17</td>
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<td>4 courses</td>
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<td>7</td>
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<td>9</td>
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<td>20</td>
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<td>–</td>
<td>19 program objectives</td>
<td>12</td>
<td>7</td>
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<td>Total</td>
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<td></td>
<td>458</td>
<td>357</td>
<td>96</td>
</tr>
</tbody>
</table>

<sup>a</sup> Excluded from analyses.

<sup>b</sup> >50% of competencies focused on knowledge transfer.

*Data from Association of Schools of Public Health, Washington, DC.*
specific competency behaviors. Only 5 (25%) specified actual competency domains of learning. Four other schools (20%) submitted nondomain-specific competencies by tracks of study or by specific courses. The remaining majority of the schools (N = 11; 55%) submitted listings of competencies with no overarching domain specifications or ties to specific tracks or courses.

Two (10%) submitted lists that outlined program objectives, rather than competency domains or competencies. Two other universities noted that their competency models were in development, including one which provided detailed information regarding their use of focus groups with 16 early and midcareerists working locally in multimillion dollar international health organizations. The other university did not specify the current development process. Also, no information was provided by the remaining 18 submitting organizations regarding the source or process for the selection of their specified program competencies (or objectives). Author experience finds that most early competency models are usually developed by faculty committees, or extracted from existing course-specific syllabi listing instructional goals and objectives, versus evidence-based competency identification, specification, and quantitative validation methodologies.43,44

Of note were the analyses of the taxonomic domains and level of expected outcomes for the specified competencies and objectives. Column E of Table 2 provides the categorization for submitted competencies/objectives as well as the targeted level for student performance. The long-established and widely accepted Bloom’s Taxonomy of Educational Outcomes was used for this review.45,46 The two domains most applicable to the majority of general global health educational programs are the cognitive (thinking) and affective (feeling) domains, both of which are widely recognized in the literature as having equivalent impact on student learning outcomes, long-term retention, and professional development.46–50 The third Bloom domain was not included in the review as it pertains more to the psychomotor skills most often unique to a particular profession or health specialist position. This psychomotor domain is more applicable to the development of health clinicians’ physical and clinical skills.51

Of the 458 competencies, including the 27 objectives that were reported, only 5 (1%) addressed specific affective domain behaviors despite the impact that students values, appreciations, motivations, and views are universally known to have on their educational experiences and outcomes, as well as their long-term professional development.50 However, more encouraging in relation to well-established adult and lifelong learning principles was the level at which 357 of the remaining 453 competencies/objectives were targeted. The outcome behaviors specifically stated for these competencies were found to match with the higher application (level 3.0) or above behaviors in Bloom’s cognitive domain, including levels 4.0 analysis, 5.0 synthesis, and 6.0 evaluation.

In relation to individual program domain profiles, the majority reported having a higher proportion of their competencies in the higher cognitive domain taxonomic levels. For 4 of the programs, however, the specified competencies/objectives were dominated by lower-level cognitive learning behaviors, at the knowledge transfer levels of 1.0 knowledge or 2.0 comprehension. At these levels, expected learning outcomes were typically represented by verbs such as “identify”, “discuss”, “describe”, and “explain”, which are more appropriate to secondary or undergraduate education. By the time students have progressed to advanced coursework or specialization in graduate school, it is recognized that longer-term retention and higher-impact learning occurs at the higher taxonomic levels. These programs and their faculty would therefore best benefit their students by progressing beyond the stated
emphasis on knowledge transfer and related lower-level performance learning outcomes. This would require the use of both learning and evaluation methods focused on application, analysis, extrapolation, and evaluation of concepts, principles, and theories—in contrast to short-term memorization of bodies of knowledge as their specified competencies denote.

**Model development**

Following the previous field survey, an ASPH Global Health Core Competency Development Consensus Conference was subsequently held in September of 2009. Nearly 50 national and international academic, practitioner, institute, and other organizational leaders participated in person or via video conferencing technologies. The aims for this conference were to establish the goal and charges for the development of the model outline, process guidelines and tenets, and to identify and specify the specific core competency domains for the model.

The project goal, charges, and targeted learner audience for the model are noted next.

**Goal:** To protect and promote population health, safety, and wellbeing at local and global levels, eliminating health and social disparities worldwide.

**Charges:** To identify key skills for the next generation of global health professional by
1. Defining what students at schools of public health should know and be able to do to improve health and eliminate disparities in populations around the world
2. Outlining other essential student attributes and characteristics for contributing to this goal.

**Learner audience:**
- Master-level students majoring in global health programs

Seven core competency domains were also identified and further specified for more defined workgroup-specific development, including
- Capacity-strengthening
- Collaboration and partnering
- Ethical reasoning and professional practice
- Health equity and social justice
- Program management
- Socio-cultural and political awareness
- Strategic analysis.

Expert panel workgroups, including more than 150 academic and field practitioner representatives, recently completed a series of structured protocol Delphi surveys for the identification and specification of the competencies for each domain. The completion of the model is slated for late 2011. Subsequent efforts by ASPH include plans for an exploration of the common features and best practices for institutions aiming to globalize their entire curricula.

**Future Imperatives for Graduate Health Profession Education**

Graduate education, like primary, secondary, and postsecondary education, is under siege for its failings, and will need to evolve in line with educational best practices or be changed externally by mandate. Oversight bodies are increasingly turning to reviewers from the disciplines of education and educational psychology for direction in the development of their standards, related review processes, and assessment methods. Accordingly, leaders and faculty in graduate education will need to
support the growing demand for transformation in pedagogy and learning and evaluation methods.53–60

As addressed in the Bridge to Quality report, faculty-focused, passive, lecture-based teaching needs to be replaced or supplemented with the student-centered, active, and experiential learning methodologies proven most effective for high-impact learning outcomes and long-term retention and performance.54,59 A large body of knowledge exists regarding these methods and their related outcomes in the field of education and its associated behavioral disciplines. As well, the evolving recommended best practices, processes, and systems for optimal learning are firmly rooted in the plethora of investigative endeavors conducted throughout the past 6 to 7 decades of twentieth century educational research. Increasingly, graduate students will present with long histories of educational experiences that have been grounded in applied and integrative learning (AIL) principles and practices, as outlined below for global health educational program consideration:

1. AIL learning methods should be
   - Action based
   - Creative
   - Engaging
   - Entertaining
   - Experiential
   - Innovative
   - Integrated with other classes
   - Intrinsically reward based
   - Used in a range of settings and contexts.

2. AIL learning methods should include
   - Cognitive and affective outcomes
   - Coaching and mentoring
   - Evidence-based problem solving
   - Higher-level educational taxonomic objectives (application, analysis, evaluation)
   - Individualized performance planning
   - Internalization of criteria for excellence and quality
   - Multidisciplinary exchange
   - Multicultural interaction
   - Reflective learning and self-assessment
   - Team-based problem solving.

As previously noted, a review of a recent accrediting body’s adoption and transition to competency specifications revealed the establishment of accrediting standards similar to others across the health professions.37 These organizations will increasingly expect evidence-based pedagogy, teaching and learning methods, and assessment practices aligned with the institution’s and the program’s missions and vision, their students’ entry characteristics, and the roles they will be entering upon graduation (see Fig. 2). Instructional methods will therefore need to be examined in relation to stated behavioral performance expectations (competencies) as well as state-of-the-art practices. Investments in faculty pedagogical development will also be continually emphasized. And, the tracking of graduates’ long-term performance and achievements will also be a core expectation.

Students as consumers faced with continued marketplace insecurity will increasingly expect more accountability for their tuition dollars. In line with workforce research and predictions, they will seek out those programs and educational experience that
closely simulate real-world and careerlike situations.\textsuperscript{38,39} As has long been documented in the industrial and organizational psychology literature, knowledge alone is not a discriminator in relation to long-term work achievement.\textsuperscript{49} Such is the tip of the performance iceberg with the real differentiators for recognized performance excellence lying \textit{below the surface of the water}: the behaviors, motivations, values, and other characteristics that graduates bring to the workplace. These less obvious learning outcomes are the critical affective domain attributes that are often left undressed in graduate education.\textsuperscript{50}

\section*{DISCUSSION}

In line with the Roger’s innovation diffusion framework as a benchmark, it is evident that the CBE journey in graduate health professions education has just begun. The work of ASPH to date, other evolving research in health professions CBE efforts, and this review support prior findings that there is little guidance in the current public health literature for directing competency-based curriculum review and preparation for new global health programs and curricula.\textsuperscript{60}

Significant attention to the development of standards for both educational outcomes and practices will need to be accomplished before a collaborative agenda for global health workforce development will evolve across the health professions and the many related specialty roles influencing the health of the world. In addition, these initiatives will need to be widely shared and disseminated for the benefit of all working toward the development of a competent global health workforce. Current indicators of global collaborative success on these issues include: 1) the translation of the \textit{Lancet}-published Commission on the Education of Health Professionals for the 21st Century report into multiple languages; 2) development of a commission website (at \url{http://www.healthprofessionals21.org/}) to “provide news on progress, global networking opportunities, and other ways to connect for all who share this [the Commission’s] global vision of reform;” and 3) future commission report follow-up meetings in Asia and the Near East.

The colleges and universities currently conducting education and training programs for global health are uniquely positioned to take a leadership role in building the body of work required for the realization of the previously mentioned initiatives. Potential opportunities include the development and showcasing of the following:

1. Model national demonstration projects for
   
   \begin{itemize}
   \item Providing frameworks and educational system approaches for integrating and using competencies and competency-based practice in global health educational programs
   \item Developing student-centered curricula focused on individual, community, and population health
   \item Elevating graduate curricula to higher taxonomic levels: analysis, synthesis, and evaluation
   \item Incorporating the affective domain and related learning and assessment methods into global health curricula
   \item Funding global health educational research related to the influence of CBE principles that support:
     \begin{itemize}
     \item Near and long-term global health leadership performance
     \item Interprofessional and multidisciplinary global health projects.
     \end{itemize}
   \end{itemize}

2. Educational development centers for sharing best practices and ongoing pedagogical innovation, development, and transfer
3. Forums for global exchange of experiences and lessons learned in identifying and specifying both competencies and compatible educational and training practices.

Leaders are clearly needed to advance the primary mission bequeathed to all universities and colleges: educating the next generation. Similar rigor, commitment to, and recognition of this graduate education imperative are unarguably overdue. Faculty would never consider not applying state-of-the-art best practices in their research endeavors, yet such is not currently required in educational practices across institutions of higher education today.

SUMMARY

As repeatedly outlined in the literature, global health success is dependent on workforce capacities, which are in turn integrally linked to the quality of educational practices provided for learner development of core competencies. Currently, the use of competencies and CBE has been significantly delayed despite the near century of educational research and advancement supporting the value of this educational methodology.

The rigor and applicability of the principles of strategic planning fit well for guiding future progress in diffusing the CBE movement globally. First an analysis of current educational methodologies (the current state) needs to be reconciled with emerging trends and requirements for education in the decades ahead (the potential state). Upon completion of this review and analysis, advocates can then initiate the development of specific strategies and the required actions for the realization of global health (the preferred state).

Findings from the deployment and research of educational innovation and evolving transformations, such as CBE and competency specification in graduate health professions education, will serve to inform and guide collaborative workforce capacity-building initiatives for the desired future: the development of an adaptable and productive workforce for global health and wellbeing.

ACKNOWLEDGMENTS

This paper is an outgrowth of work undertaken by the Association of Schools of Public Health (ASPH) to develop competencies for various public health arenas, in particular the initiative to create a competency model for students in master’s-level global health programs. Special recognition is extended to the following for their ongoing championship and support of competency-based development in health professions education and research: 1) our ASPH colleagues—Elizabeth Weist and Jessica Petrush; 2) our University of Minnesota School of Public Health colleagues John Finnegan and Adrienne Voorhees; and 3) our research colleagues—Katie Droz, Natalia Maska, Krupa Patel, Susan Weidenbach, and Elizabeth Wurth.

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