Public Health Workforce Development: Progress, Challenges, and Opportunities

Maureen Y. Lichtveld and Joan P. Cioffi

The public health workforce is key to strengthening public health infrastructure. National partners have articulated a vision of a sustainable and competent workforce prepared to deliver essential public health services. Six strategic elements provide a framework for action: monitoring workforce composition; identifying competencies and developing related curriculum; designing an integrated life-long learning delivery system; providing individual and organizational incentives to ensure competency development; conducting evaluation and research and assuring financial support. Partners convened in January 2003 to review progress and to re-evaluate strategies in light of the recently released Institute of Medicine reports on infrastructure and workforce issues. Although significant challenges remain, there is convergence on priorities for competency development, research questions to be addressed and next steps in the national dialogue on certification and credentialing in public health.

KEY WORDS: public health infrastructure, public health practice, public health workforce

The workforce is a foundation element of public health infrastructure as conceptualized in Figure 1. The capacity and readiness of a public health system is defined, in part, by both the governmental agency workforce and the community partners. A strong infrastructure enables the public health system to prepare for, and respond to, both acute and chronic threats to the nation's public health, whether the threats are from terrorism, emerging infections, disparities in health, or increases in chronic diseases and injury rates. Of the nation's estimated 400,000 to 500,000 public health professionals, few report formal graduate level public health education. Public health workforce development is chronically underfunded. The current national focus on preparedness highlights the importance of a system to ensure the ongoing competency development of the front line to deliver essential services and respond to public health threats and emergencies.

Criticism of workforce training and preparation was strong in the 1988 Institute of Medicine (IOM) report on public health.1 Schools of public health, employers, federal agencies, and professional groups were called upon to remedy the situation. In response, federal, state, and local initiatives were developed with some success. Newly released IOM reports2,3 suggest that although some progress has been made, much work remains. Table 1 shows the competency and content requirements for the public health workforce described in major documents from 1988 to 2002.

- Public Health Workforce Development—A National Agenda Update

The Third Annual Public Health Workforce Development Meeting was held on January 22–23, 2003, in Atlanta. The purpose of this meeting was to facilitate implementation of a national action agenda for strengthening the public health workforce and build upon previous expert panel recommendations.4 The six strategic elements that frame implementation strategies with partners are illustrated in Figure 2.

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A summary of the policy, science, and practice implications related to the six strategic elements is provided in Table 2. This summary was identified by expert panel workgroups participating in the Centers for Disease Control and Prevention (CDC) Task Force on Public Health Workforce Development (1999) and in the Annual Public Health Workforce Development meetings and expert panel workgroups convened from November 2000 through January 2003. More than 400 participants representing the practice and academic community, professional organizations, and federal agencies have been involved to date.

The participants in the January 2003 meeting were charged to re-evaluate priorities and strategies in light of recently released Institute of Medicine reports on public health and educating public health professionals, as well as national preparedness efforts. The meeting objectives focused on identifying priorities for competency development, clarifying certification and credentialing issues in public health, and setting a research agenda for public health workforce development. Partner organizations were asked to identify specific ways in which they would contribute to the national agenda and IOM recommendations in the coming year. Expected outcomes included further development and implementation of competency-based learning opportunities for front-line public health, and testing the feasibility of the three-tiered framework for voluntary certification and credentialing in public health proposed in earlier meetings (see Cioffi et al’s article “Credentialing the Public Health Workforce: An Idea Whose Time Has Come” in this issue of JPHMP).

A series of speakers summarized progress, challenges, and opportunities in public health workforce development, with specific emphasis on issues related to competencies and certification.

Progress highlights since the last annual meeting included completion of an enumeration of the public health workforce, formation of the Public Health Workforce Collaborative, funding for CDC’s Centers for Public Health Preparedness program and Health Resources and Services Administration (HRSA) Public Health Training Centers (HRSA-TC); convening of the first annual Public Health Systems Research Affiliate of the Academy for Health Services Research and Health Policy meeting (in June 2002), and publication of competency sets for core public health, informatics, genomics, public health law, and bioterrorism and emergency response.
## TABLE 1 Identified needs for public health workforce

<table>
<thead>
<tr>
<th>Competency/Content</th>
<th>IOM 1988&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Healthy Communities 1996&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Faculty Agency Forum&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Competencies Developed 2001–2002, Council on Linkages&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Performance Standards; Core Functions; Essential Services&lt;sup&gt;e&lt;/sup&gt;</th>
<th>The Future of the Public Health in the 21st Century (2002)&lt;sup&gt;f&lt;/sup&gt;</th>
<th>Who Will Keep the Public Healthy? (2002)&lt;sup&gt;g&lt;/sup&gt;</th>
</tr>
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<tbody>
<tr>
<td>Managerial skills</td>
<td>✓</td>
<td></td>
<td></td>
<td>All of the above</td>
<td>All of the above</td>
<td>Community-based participatory research</td>
<td>Community-based participatory research</td>
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<td>Leadership skills</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>All of the above</td>
<td>All of the above</td>
<td>Health disparities</td>
<td>Health disparities</td>
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<tr>
<td>Technical professional skills</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Global health</td>
<td>Global health</td>
</tr>
<tr>
<td>Citizen participation</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Minority health</td>
<td>✓</td>
<td></td>
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<tr>
<td>International health</td>
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<td></td>
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</tr>
<tr>
<td>Modern disease (e.g., AIDS)</td>
<td>✓</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Assessment skills</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>All of the above</td>
<td>All of the above</td>
<td>MPH</td>
<td></td>
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<tr>
<td>Policy skills</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>All of the above</td>
<td>All of the above</td>
<td>MPH</td>
<td></td>
</tr>
<tr>
<td>Assurance skills</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>All of the above</td>
<td>All of the above</td>
<td>MPH</td>
<td></td>
</tr>
<tr>
<td>Law</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>Performance standards</td>
<td></td>
<td></td>
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<tr>
<td>Managed care</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partnerships and interactions</td>
<td>✓</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ten Essential Services</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Communication skills</td>
<td>✓</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Cultural skills</td>
<td>✓</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

<sup>a</sup>Institute of Medicine 1988 available at www.nap.edu/books/0309038308.html.
<sup>b</sup>Healthy Communities available at www.hospitalconnect.com/communityhth/resources/healthcommunities.html#GuidesTools.
<sup>c</sup>Faculty Agency Forum available at http://bookstore.phf.org/prod119.htm.
<sup>d</sup>Council on Linkages Core Competencies available at www.trainingfinder.org/competencies/list.htm.
<sup>e</sup>Performance Standards available at www.phppo.cdc.gov/nphpsp/index.asp.
<sup>f</sup>Core Functions-Essential Services available at www.phppo.cdc.gov/nphpsp/10EssentialPHServices.asp.
<sup>g</sup>The Future of the Public’s Health in the 21st Century available at www.nap.edu/books/030908704X/html/.
<sup>h</sup>Who Will Keep the Public Healthy? available at www.nap.edu/books/030908542X/html/R1.html.

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**FIGURE 2.** Strategic elements for public health workforce development. Reprinted from Centers for Disease Control and Prevention (CDC), Public Health Practice Program Office, 1999, Atlanta, Georgia.
### TABLE 2  Challenges and implications for public health workforce development

<table>
<thead>
<tr>
<th>Strategic element</th>
<th>Science</th>
<th>Policy</th>
<th>Implications for practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor workforce composition and project needs</td>
<td>Without a scientific base upon which to develop a standard ratio of workers to area, the use of workforce target numbers is arbitrary.</td>
<td>New policy is needed that defines a standard ratio of workers needed per unit area.</td>
<td>Currently, only estimates of the number and composition of the workforce have been generated, which creates difficulty in projecting resource needs for program implementation.</td>
</tr>
<tr>
<td>Identify competencies/Develop curriculum</td>
<td>Key scientific gaps still exist in many disciplines, hampering development of discipline-specific competencies.</td>
<td>Policy leading to national acceptance of standardized, competency-based training with built-in incentive structures (certification/credentialing) is needed.</td>
<td>Competencies must be translated into integrated training to ensure that public health professionals understand each other’s skills, thereby improving coordination of multidisciplinary efforts.</td>
</tr>
<tr>
<td>Integrated learning system</td>
<td>Only limited data exist regarding distributed learning delivery systems and adult learning performance.</td>
<td>Strategies should be developed to integrate the several existing federal, state, and local academic learning systems.</td>
<td>The infrastructure, networks, and awareness of learning systems varies significantly among agencies.</td>
</tr>
<tr>
<td>Incentives to ensure competency</td>
<td>No national system of incentives (including certification and credentialing) exists to ensure competency. Any such system should include strategies to promote lifelong learning.</td>
<td>Policy is needed to encourage recognition of specialized training and to allow portability of that recognition across state lines in emergency situations.</td>
<td>Development of models for career ladders and other incentives for staff (recognition, pay increase, promotion potential) needs to parallel implementation of new learning requirements.</td>
</tr>
<tr>
<td>Conduct evaluation and research</td>
<td>Knowledgebase linking individual competence to organizational performance and health outcomes is not well-developed.</td>
<td>Evaluation strategies should be based on relationships among individual competence, organizational performance, and health outcomes.</td>
<td>Lack of feedback from evaluation makes it difficult to determine capacity and preparedness of the workforce.</td>
</tr>
<tr>
<td>Ensure financial support</td>
<td>Evaluation and accountability efforts are critical to public health’s demonstration of its essential worth to the Nation and to achieve recognition of the cost/benefit in expenditure of resources on public health programs.</td>
<td>To foster dual use of the Nation’s public health network, DHHS must ensure that various federal programs working to enhance the Nation’s public health preparedness work in collaboration.</td>
<td>Sustainability of core funding continues to be a prime concern for the public health infrastructure. While the influx of bioterrorism funds can further development of public health workforce capacity, it could result in a resource drain on non-bioterrorism public health programs.</td>
</tr>
</tbody>
</table>

### Issues in Workforce Development Facing the Nation

#### Competency development

Competency requirements for public health practice are not static. The Council on Linkages between Academia and Practice (1999) articulated core competencies and recent IOM reports (2003, 2004) (which have identified eight emerging areas for competency development: informatics, communications, community-based participatory research, global health, ethics, genomics, cultural competency, and policy and law) provide a foundation for guiding action. There is general recognition that competencies need to be tied to practice and that there are multiple pathways to achieving individual competency.

Within the national agenda, significant progress has been made in developing a road map for further competency and curriculum development. For example, a Competencies to Curriculum Toolkit (2003) will be available to guide continuing education course development. The toolkit is a blueprint for translating competencies into learning and instructional objectives.

Despite this progress, key scientific gaps still exist in many disciplines, which hampers development of discipline-specific competencies. Policy leading...
to national acceptance of standardized, competency-based training with built-in incentive structures (certification/credentialing) is lacking. Competencies must be translated into all aspects of education and training: from needs assessments to ascertainment of knowledge gained and evaluated for effect, not only on individual, but also organizational performance.

The mere existence of competencies, even if accepted nationally and implemented uniformly, is unlikely to result in improved knowledge as a “natural” course of action. There is limited understanding how educational competencies—specifically those employed in an formal academic setting—relate to workforce competencies aimed at describing the skills, knowledge, and abilities of practitioners in their respective functional roles. As a result, a perception exists that competencies only relate to the academic setting and are not applicable in the context of practice. A transdisciplinary approach within the disciplines representing public health and between public health and medicine can facilitate a more transparent articulation of competencies and their relevance to practice.

**Providing incentives to ensure competency development**

There is general agreement that any attempt to establish certification and credentialing in public health should be inclusive, voluntary, competency-based, and with multiple pathways to achievement. To date, the three-tiered framework established at the First Annual Public Health Workforce Development Meeting in November 2000 at Callaway Gardens has gained acceptability and become synonymous with the term “Callaway process” meaning dialogue, partnership, and a commitment to roll up your sleeves and tackle the issue. The framework includes three levels or tiers: entry or basic, discipline-specific, and leadership (Tiers One, Two, and Three, respectively).

Issues of science, policy, and practice remain. Evidence about the value of certification in public health is lacking. Any incentive system should include strategies to promote lifelong learning. National policy is needed to encourage recognition of specialized training and to allow portability across state lines for all relevant disciplines. This would be of particular value in emergency situations. The implementation of any new credentialing in public health has significant implications for practice. Complementary human resources strategies (e.g., career ladders, reward, and recognition programs) and fiscal resources should parallel implementation of any new certification requirements. Failure to at least address issues such as this one might result in unintended consequences that could affect the support of the practice community and the sustain-

ability of this important endeavor to strengthen our nation’s public health system.

**Building a science base**

Evidence of the effects of workforce quantity (staffing levels and mix) and quality (professional education/credentialing) on performance of core public health functions is limited. Research suggests that the effects of workforce (capacity and competency) will be modified by the characteristics of the agencies in which individuals work. The science base to predict the nature and extent of such effects is lacking.

Over the past three years, a framework (logic model) for the relationship between workforce development, organizational capacity, and health outcomes has provided a foundation to identify and prioritize research gaps in workforce development. Five priority areas for research are listed below:

1. **Predictive relationship**—determining the relationship between performance indicators for workforce systems and health outcomes controlled for community context; where performance indicators are defined as those listed in the local health department survey for Essential Service #8—National Public Health Performance Standards Program.
2. **Competency development**—identifying effective methods for building individual competency (e.g., training, mentoring, agency experience, tenure, certification), and identification of the organizational variables that support competency development/application.
3. **Workforce performance**—determining best indicators for measuring workforce performance (e.g., workforce size) or productivity measures.
4. **Workforce monitoring**—establishing a system to track and monitor data about the public health workforce (e.g., size, distribution, composition, career path, credentialing).
5. **Labor market forces**—describing the context for employment in public health (e.g., personnel systems, etc.) that influence recruitment and retention.

Until there is a scientific basis for why investments in workforce development pay off for individuals, organizations and the communities they serve, health officials will continue to struggle with limited budgets that hamper recruitment, retention and development of top quality staff. At the same time, limited funding hampers the conduct of research focused on public health systems and workforce issues.

Addressing the gaps to strengthen the science base for workforce development requires a clear statement of the research needs, visibility, and nontraditional
partnerships of funders, scientists, and practitioners alike. The priorities outlined above are a step in the right direction.

**Opportunities**

The findings and recommendations from the recent IOM reports23 (correlated well with the National Strategic Plan for Workforce Development (the strategic elements outlined in Figure 2) and validated many issues of policy, science, and practice (as identified in Table 2).

These reports stress the importance of partnerships for action. For example, the national dialogue on workforce development has highlighted the evolving nature of partnerships: intra- and intergovernmental; public and private sector; academia and practice. Clearly, there are advantages for both academia and practice to address the issues of competency development, certification, and credentialing and research together. Academia is shaping the future leaders of public health—research and curricula can be informed by front-line issues. Incentive and credentialing movements will motivate interest in advance education and life-long learning provided by academia. Practice can benefit from academic assets such as surge capacity expertise, assessment, evaluation, and advanced e-learning technology.

The national focus on terrorism preparedness and front-line readiness has brought unprecedented visibility to public health. Demonstrating full accountability for enhanced readiness to handle current and emerging health threats represents both an opportunity and a challenge.

**Next Steps**

In light of the publication of the recent IOM reports,23 the Third Annual Public Health Workforce Development of January 2003 meeting marked the end of planning discussions and renewal of commitments to implementation. Significant accomplishments have been documented in each strategic element of a national plan for public health workforce development: monitoring the workforce; identifying competencies/developing curriculum; designing an integrated life-long learning system; providing incentives to ensure competency; conducting evaluation and research, and ensuring financial support.16 Future national meetings on workforce development must fully engage the broad array of partnerships (e.g., practice and academic; public and private sector) required for action.

The following are areas of anticipated progress in the coming year:

- **Competency.** Although it is appropriate that competency sets expand, it is important to set priorities for translating these into curricula. Examples might include informatics, emergency preparedness, public health law, genomics, and cultural competency that have been identified by IOM and exist in some form already. The Competencies to Curriculum Toolkit13 is anticipated for dissemination by fall 2003 and can guide further curriculum development. Competency sets that need to be developed can be identified and priorities set. These might include: ethics and discipline-specific competency sets that integrate the eight recommended emerging areas from the IOM workforce report. This topic will be considered by the expert panel workgroup at the annual meeting in January 2004.

- **Incentives.** The Association of State and Territorial Health Officials (ASTHO) and the National Association of County and City Health Officials (NACCHO) agreed to take the lead in further developing the implementation of a Tier One or basic certification. A report is expected by September 2003. CDC and HRSA will convene a small group of specialty practice organizations in October 2003 to further explore strategies for implementing Tier Two or discipline-specific certifications. Continued dialogue among partners is creating momentum around Tier Three or leadership-level certification.

- **Research.** The research agenda for workforce development is considered a subset of public health systems research. Presentations and publications will be used to disseminate and obtain feedback on the priorities identified. A town hall meeting is scheduled at the November 2003, American Public Health Association (APHA) meeting. New partnerships are being developed to stimulate dialogue and action. The special Academy Health Affiliate on Public Health Systems Research is an example. Within CDC, scientists engaged in public health systems research are creating a working group to organize and grow the field.

**Strategies for Sustainability**

Although unprecedented resources are currently available to support public health preparedness, a
well-functioning public health system requires a causal, rather than symptomatic approach to foster sustainability. As we transform from epidemiologists to disease detectives, public health and its leaders must:

- Integrate, not isolate, the practice of public health and move beyond a multi-disciplinary model to one resembling a transdisciplinary approach that embraces public health, health care and non-health fields.
- Act in a manner consistent with the most contemporary science and employ professional judgment when action is needed in the absence of complete scientific evidence.
- Account for, and leverage, the resources being made available to strengthen our nation’s readiness for terrorism and other health threats.
- Realize that funding is critical but only one of many drivers for achieving a “healthier” public health system.

Whether the issue is resource allocation or a national policy on credentialing, public health leaders will continue to face choices that will irrevocably shape the future.

**Summary**

The Third Annual Public Health Workforce Development meeting ended with agreement that implementation of a national action agenda is possible while issues of science, policy and practice continue to be addressed. The Public Health Workforce Collaborative, a partner-driven consortium, under the leadership of ASTHO, offered to serve as a forum for reporting and monitoring progress. Future workforce annual meetings will focus on results and accomplishments in achieving enhanced front line preparedness.

Public health leaders at every level must place a high priority on systematic approaches to workforce development if the gains from the past decade and new investments in public health infrastructure are to make an impact. Such advancements go beyond the mechanics of education or training. The public health workforce is not well served when workforce development is equated with random access to courses lacking substantive performance measures. Achieving a sustainable, high-quality cadre of public health professionals requires real action from real leaders undaunted by the task of transforming public health.

**REFERENCES**


