Preparing Master of Public Health Graduates to Work in Local Health Departments

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Objective: To identify key competencies and skills that all master of public health (MPH) graduates should have to be prepared to work in a local health department. Methods: In 2011-2012, the New York City Department of Health and Mental Hygiene administered electronic surveys to 2 categories of staff: current staff with an MPH as their highest degree, and current hiring managers. Results: In all, 312 (77%) staff members with an MPH as their highest degree and 170 (57%) hiring managers responded to the survey. Of the respondents with an MPH as their highest degree, 85% stated that their MPH program prepared them for work at the New York City Health Department. Skills for which MPH graduates most often stated they were underprepared included facility in using SAS® statistical software, quantitative data analysis/statistics, personnel management/leadership, and data collection/database management/data cleaning. Among the skills hiring managers identified as required of MPH graduates, the following were most often cited as those for which newly hired MPH graduates were inadequately prepared: quantitative data analysis, researching/conducting literature reviews, scientific writing and publication, management skills, and working with contracts/requests for proposals. Conclusion: These findings suggest that MPH graduates could be better prepared to work in a local health department upon graduation. To be successful, new MPH graduate hires should possess fundamental skills and knowledge related to analysis, communication, management, and leadership. Local health departments and schools of public health must each contribute to the development of the current and future public health workforce through both formal learning opportunities and supplementary employment-based training to reinforce prior coursework and facilitate practical skill development.

KEY WORDS: master of public health, MPH, public health competencies, public health workforce, workforce development

Master of public health (MPH) graduates are seldom fully prepared to work in a local health department (LHD). They are well educated in their area of concentration (eg, health education, epidemiology, environmental health) but often lack other key skills required for entry-level and managerial positions at LHDs. 1,2 In 2014, Abbas et al 3 concluded after surveying public health practitioners and academic institutions that the “lack of congruence between what is taught in MPH programs and what is required could result in public health practitioners being ill-prepared for the demands of the real world.” An MPH graduate working at an LHD may be expected to perform as

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a competent personnel and fiscal manager, skilled oral and written communicator, and data analyst who implements and evaluates public health programs. Students may not be fully aware of these expectations, and schools of public health, including their internship offerings, may not provide enough opportunities to prepare students to meet them.

The Association of Schools & Programs of Public Health (ASPPH) and the Council on Linkages Between Academia and Public Health Practices (Council on Linkages) have established standardized competencies for public health workers: ASPPH competencies are a resource and guide for those interested in improving the quality and accountability of public health education and training, and the Council on Linkages Core Competencies for Public Health Professionals lists skills that are desirable for entry-level staff, supervisors and managers, and senior managers. The ASPPH Core MPH competencies outline 5 traditional core areas of public health and 7 interdisciplinary/crosscutting areas that MPH graduates should be competent in upon graduation. Adherence to these competencies by academic institutions and public health organizations is voluntary.

In April 2011, the New York City Department of Health and Mental Hygiene (NYC Health Department) launched a project to identify key competencies and skills that all MPH graduates should have to be prepared to work in an LHD such as the NYC Health Department. The project focused on skills needed for entry level through mid-level/managerial positions. Although the skills required for each of these 2 levels are somewhat different, it is important for MPH curricula to prepare graduates for both of these levels, given that (1) MPH is often a terminal degree and thus many who start at the entry level will likely not receive additional formal training before being promoted to a mid-level managerial position and (2) some public health staff members choose to pursue their MPH mid-career so that they can be promoted to mid-level managerial positions. While other studies and organizations such as Health Resources and Services Administration–funded Public Health Training Centers have assessed and documented the public health skills needed by public health workers, ours is the first formal assessment of skills that are required of recent MPH graduates joining an LHD.

### Methods

We reviewed the ASPPH Core MPH competencies and the Council on Linkages Core Competencies for Public Health Professionals to identify key competencies and skills that were applicable to MPH graduates.

#### Survey of staff with an MPH as their highest degree

We first conducted a survey to determine how well MPH coursework prepared current staff for their first NYC Health Department job and to identify strengths and gaps in their MPH curricula. Specifically, this survey included questions on when their MPH degree was completed, their first position at the NYC Health Department, and their satisfaction with their MPH program. Open-ended questions were used to identify any and all public health skills and competencies that were necessary for their first post-MPH position at the NYC Health Department and to avoid biasing respondents with a predetermined list.

On the basis of self-reported information from the department’s Employee Data Bank, 405 staff members were identified as having an MPH as their highest degree. The survey was disseminated electronically to these staff via SurveyMonkey in May 2011. Staff were given a week to respond to the survey, and 2 reminder e-mails were sent after the deadline.

Descriptive statistics were calculated using SAS. The study team reviewed the skills identified as most often required in MPH respondents’ first jobs at the NYC Health Department and organized them into competency areas.

#### Survey of hiring managers

A second survey was conducted to identify competencies and skills that are expected of MPH graduates hired by the NYC Health Department and to assess whether MPH graduates have these skills upon hire. Survey questions were included to identify the number of employees respondents hire per year, the number of MPH staff directly supervised in the past 3 years, and the current NYC Health Department division in which respondents were employed. Competencies identified in the MPH staff survey were used as the response choices for this survey, identifying (1) the primary duties of the staff with an MPH as their highest degree that they directly supervise, (2) the required skills all staff members with an MPH degree should possess, and (3) the key skills that MPH graduates hired into their program most often lack.

Human Resources identified 296 hiring managers at the NYC Health Department, defined as staff who hired and directly supervised individuals. In January 2012, this survey was disseminated electronically via SurveyMonkey. Hiring managers were given a week to respond to the survey, and 2 reminder e-mails were sent after the deadline. Hiring managers with an MPH as their highest degree received both of the surveys we administered.
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Descriptive statistics were calculated using SAS®9.2. Hiring managers who did not directly supervise staff or consultants (not including interns) over the past 3 years were disqualified from the survey.

Institutional review board review
This project was a public health activity.

● Results

Survey of staff with an MPH as their highest degree
Of the 405 staff members invited to participate, 77% (n = 312) completed the survey. Most of the respondents (67%, n = 210) had received their MPH degree in the last 10 years (2002-2011), whereas 40% (n = 125) had received their MPH degree in the last 5 years (2007-2011). Twenty-seven percent of respondents received their MPH degree in 2002-2006. The median number of years since earning their MPH degree was 7.5 (range, 0-36 years). A quarter of the respondents indicated that they were working at the NYC Health Department when they earned their MPH degree.

While 85% of the respondents stated that their MPH programs prepared them for work at the NYC Health Department, 10% stated that their MPH degree was not necessary for their first NYC Health Department job. Of those who responded that they did not need an MPH degree for their first position at the NYC Health Department, 23% received their MPH degree while working at the NYC Health Department. Satisfaction with how well the MPH program had prepared staff for work at the NYC Health Department was consistently high over the years represented (1975-2011).

Staff completing the survey were asked, through an open-ended question, to list the public health skills and competencies that were necessary for their first post-MPH position at the NYC Health Department. They were allowed to enter as few or as many items as they wished. In response about one-half of the respondents listed quantitative data analysis/statistics as necessary, whereas 27% and 21% listed epidemiology and evaluation, respectively. The top 10 themes identified are bolded in the third column of the table which is included on Supplemental Digital Content (available at: http://links.lww.com/JPHMP/A139).

<table>
<thead>
<tr>
<th>Primary Skills (Competency Area)</th>
<th>Respondents, n (%)</th>
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<tbody>
<tr>
<td>Quantitative data analysis (research and analysis)</td>
<td>54 (75)</td>
</tr>
<tr>
<td>Data/database management (research and analysis)</td>
<td>47 (65)</td>
</tr>
<tr>
<td>Researching/conducting literature reviews (research and analysis)</td>
<td>47 (65)</td>
</tr>
<tr>
<td>Writing internal reports (communication/education)</td>
<td>46 (64)</td>
</tr>
<tr>
<td>Interacting with stakeholders—internal and external (communication/education)</td>
<td>44 (61)</td>
</tr>
<tr>
<td>Presenting to internal and external audiences (communication/education)</td>
<td>41 (57)</td>
</tr>
<tr>
<td>Research and analysis (overall)</td>
<td>37 (51)</td>
</tr>
<tr>
<td>Program evaluation (policy development, program planning, and evaluation)</td>
<td>37 (51)</td>
</tr>
<tr>
<td>Scientific writing and publication (research and analysis)</td>
<td>35 (49)</td>
</tr>
<tr>
<td>Designing and/or conducting surveys (research and analysis)</td>
<td>32 (44)</td>
</tr>
</tbody>
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Survey of hiring managers
Of the 296 hiring managers invited to participate, 57% (n = 170) completed the survey. Of the respondents, only 54% (n = 92) who directly supervised staff or consultants (not including interns) over the past 3 years were allowed to complete the rest of the survey. When asked to (1) list the primary duties of the staff with an MPH as their highest degree that they directly supervise; (2) state what required skills all staff members with an MPH degree should possess; and (3) select key skills that MPH graduates hired into their program most often lack, 78% (n = 72) of the respondents remaining in the survey answered 1 or more of the 3 questions. The top 10 skills identified by these respondents as primary duties are provided in Table 1. Six of the 10 top skills were in the competency area of research and analysis, whereas 3 were in communication/education and 1 was in policy development, program planning, and evaluation. Financial planning, management/leadership, and program services were 3 competency areas from the survey tool that were not represented on the top 10 list of skills required of MPH graduates upon their initial hire.
Among the 72 hiring managers included in our original data set, only 60 selected at least 1 skill that MPH graduates hired into their program were most often lacking. Table 2 lists the 10 skills most often identified by these hiring managers as “required but lacking” among MPH graduates. Five of these skills are in the research and analysis competency area, 3 are in financial planning, 1 is in management/leadership, and 1 is in communication/education. Six of the most often cited “required but lacking” skills were also identified by hiring managers as primary duties of staff with an MPH as their highest degree. These skills are bolded in Table 2.

**Discussion**

The data from these surveys suggest that despite the fact that MPH graduates are generally satisfied by how well their MPH programs prepared them, MPH graduates come to their first NYC Health Department position underprepared to do some parts of their jobs. According to hiring managers, gaps in knowledge and skills exist in broad areas such as (1) quantitative data analysis, (2) scientific writing, and (3) management (including developing and managing budgets and internal reports). These 3 areas were also identified by hiring managers as “required but lacking” among newly hired MPH staff among the top 10 skills identified by MPH graduates as areas in which they needed more preparation. We believe our findings are generalizable to other large urban and large state health departments. We urge smaller health departments to conduct similar assessments to identify their public health workforce priorities. In 1988, the Institute of Medicine defined the core functions of public health agencies at all levels of government as assessment, policy development, and assurance. The skills identified at the NYC Health Department are ones that are necessary to effectively carry out the core public health activities that all LHDs engage in.

To ensure that graduates have basic analytic skills and can communicate data and findings effectively, quantitative data analysis and scientific communication should be mandatory components of the MPH curriculum. In 2008, Moser described the variation in the depth and quality of MPH graduates’ public health skills that fall outside their major field. His commentary and our findings seem to suggest that the need to strengthen the existing accreditation requirements to reduce the variability in the skills MPH graduates possess. The NYC Health Department currently offers continuing education courses to its staff, including epidemiology and biostatistics, program evaluation, and scientific writing, that partially fulfill training needs.

Upon reaching out to staff who focus on quantitative data analysis, we learned that the majority of the staff were interested in additional training in advanced statistical methods. These findings support the need to maintain and strengthen in-house analytic capacity with on-the-job courses in applied analyses at a time when the skills are relevant to professional responsibilities. Continuing education within the workplace also allows staff who have been out of school for many years to learn the latest analytic techniques or to refresh their skills. The NYC Health Department is currently collaborating with a local school of public health to develop and offer short courses in advanced statistical methods. It is also creating writing mentorship programs where university faculty or experienced NYC Health Department authors mentor junior authors. This will improve scientific communication skills among junior staff while giving more seasoned staff the opportunity to serve as mentors. A workforce versed in the aforementioned skills will ensure that public health agencies such as LHDs will have the capacity to efficiently fulfill their core public health functions.

While schools of public health have made efforts to respond to the need to broaden the core public health skill sets of their recent graduates through more comprehensive curricula, alumni of these programs are still in need of additional and/or refresher training opportunities to practice and reinforce skills they learned.

### TABLE 2  Top 10 Skills Identified by Hiring Managers as Required for Staff With an MPH Degree and Most Often Lacking Among Newly Hired MPH Staff (N = 60) 

<table>
<thead>
<tr>
<th>Lacking skills (Competency area)</th>
<th>Respondents, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative data analysis (research and analysis)</td>
<td>15 (25)</td>
</tr>
<tr>
<td>Researching/conducting literature reviews (research and analysis)</td>
<td>15 (25)</td>
</tr>
<tr>
<td>Scientific writing and publication (research and analysis)</td>
<td>14 (23)</td>
</tr>
<tr>
<td>Management skills (management/leadership)</td>
<td>14 (23)</td>
</tr>
<tr>
<td>Working with contracts/requests for proposals (financial planning)</td>
<td>10 (17)</td>
</tr>
<tr>
<td>Grant writing and/or grant management (financial planning)</td>
<td>8 (13)</td>
</tr>
<tr>
<td>Data/database management (research and analysis)</td>
<td>7 (12)</td>
</tr>
<tr>
<td>Designing and/or conducting surveys (research and analysis)</td>
<td>7 (12)</td>
</tr>
<tr>
<td>Presenting to internal and external audiences (communication/education)</td>
<td>7 (12)</td>
</tr>
<tr>
<td>Working with budgets/financial management (financial planning)</td>
<td>7 (12)</td>
</tr>
</tbody>
</table>

*Bolded items are required but lacking skills/competencies that were cited also as primary duties of staff with an MPH as their highest degree.*
while in school. Hiring managers may have unrealistic expectations of what can be taught in an MPH curriculum; LHDs can address these unrealistic expectations and the gaps in required skills by providing project-based, practical continuing education on the job. In particular, as part of workforce development efforts, LHDs should offer supplemental analytic training to reinforce prior MPH coursework.

The preparation for a role as a public health manager may start during the MPH curriculum but must be refined and expanded during the early years of the graduate’s public health career. While many of the finer points of management are learned informally through mentorship or on-the-job experience, there is also a role for formal training. Recognizing this need for supplemental mid-career management training, other public health organizations have implemented programs to address the gap, such as the Public Health Management Certificate program developed by the Northwest Center for Public Health Practice at the University of Washington School of Public Health and the Management Academy for Public Health offered by the School of Public Health and the Kenan-Flagler Business School at the University of North Carolina at Chapel Hill.

Another source of training for mid-career public health managers is the Public Health Training Centers Network, funded by the federal Health Resources and Services Administration, to strengthen the technical, scientific, managerial, and leadership competence of the current and future public health workforce. For more than 10 years, the NYC Health Department has partnered with the Health Resources and Services Administration–funded training center at Columbia University Mailman School of Public Health (Public Health Training Center) that has provided free training to NYC Health Department staff in areas such as program evaluation, cultural competency, managerial skills, and health impact assessment. In addition, the NYC Health Department has begun to work with local schools of public health to determine the feasibility of establishing a certificate program that covers key topics in public health management using an applied, project-based design, supplemented with a didactic component. Participants would acquire and immediately apply skills most useful to the working public health professional.

To ensure success in developing the public health workforce, LHDs and schools of public health should work together. Abbas et al describe the relationship between academia, practice organizations, and students as a triad relationship and suggest that the existing disconnect between the 3 groups serves each of their needs poorly. Continuing education approaches for the public health workforce may be most successful if they are tailored for the job at hand and grounded in adult learning theory, which actively involves adults in the learning process.

The findings from this survey project have several limitations. First, we surveyed only staff from the NYC Health Department and did not include staff from smaller or less diverse LHDs. We recognize that the NYC Health Department is not representative, given its size, access to resources, and diversity in staff’s academic preparation. However, we believe that the findings and recommendations presented in this article are applicable to many LHDs since the activities that the NYC Health Department engages in are core public health functions of all LHDs. While staff with MPH graduates at much smaller health departments may not have the luxury of focusing on advanced statistical analyses, they will likely require analytic skills, in addition to other public health skills cited as “required” by hiring managers in this survey. The approaches to providing continuing education on the job must then be tailored to the size and needs of the LHD. In addition, we only surveyed staff with a terminal MPH degree. It is highly likely that this group included staff currently pursuing advanced degrees, and their responses regarding level of preparedness may have been skewed by their advanced academic pursuits. It is likely that recall bias was introduced when surveyed staff were asked to identify skills needed for their first post-MPH position as well as skills that their MPH program did not prepare them for. It is also likely that the level of preparation respondents reported for their first position does not reflect on the level of preparation provided by MPH programs, since they did not have an MPH degree when they started working at the NYC Health Department. We also acknowledge that not all hiring managers surveyed were in charge of day-to-day supervision of MPH graduates and therefore may not have had intimate knowledge of their skills.

● Conclusions

Graduates of professional degree programs seldom emerge fully formed, with the knowledge and skills necessary to address every possible real-world challenge. Supplementary employment-based training is necessary to refine academic preparation. Our project supports prior studies that suggest that the workplace and schools of public health must both contribute to the development of a skilled and competent public health workforce. The ASPPH’s Key Considerations for a 21st Century MPH Degree provides further support for our project. Listed among the key considerations are suggestions that the MPH program should be designed to address the needs of prospective employers,
and content in the MPH curricula should be aligned regularly with the skills, knowledge, and attitudes that employers expect in graduates. At a time when fiscal resources and personnel are limited, it is critical that LHDs make the most of their personnel resources. To be successful, local/state health department employees must possess fundamental skills and knowledge related to analysis, communication, management, and leadership, none of which are easily acquired through existing MPH programs alone. These findings suggest that MPH programs must be enhanced with applied projects that provide graduates with a stronger foundation in certain fundamentals such as quantitative analysis and scientific communication and that LHDs must be prepared to provide new hires with the training and opportunities necessary to refine skills that are applicable to their work. Increasing the availability of on-the-job training is economical and will be particularly important in the short term since any enhancements in MPH curricula will take several years to impact the public health workforce. Finally, schools of public health and local, state, and federal public health agencies, and other public health training entities, should work collaboratively to develop and offer training opportunities for early- and mid-career public health professionals who will soon take on managerial and leadership roles and should devote resources to support this effort.

REFERENCES


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