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Health Department Physician Workforce: a literature review

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Abstract

Introduction: This literature review was done to determine the degree to which currently available literature provides useful guidance as to optimal physician staffing of state and local health departments.

In this paper, the “gold standard” for professional qualifications for agency directorship is designated as a physician board certified in General Preventive Medicine/Public Health (GPM/PH) whose practicum training was provided in a state or local public health agency.

Methods: This review was based on papers in the July/August issue of *Health Affairs*, work previously done by Joel Nitzkin, IOM reports on the public health infrastructure, COGME documents and personal communications.

Findings: The currently available literature shows state and local health departments unequal to the task of providing needed public health services and policy guidance. The current literature does not address professional qualifications of the agency director and/or management team, specialized program activities, or public health infrastructure needs for physician staffing by any categorization of specialized physician services. There is no literature addressing professional qualifications of agency leadership or staff as a determinant of agency or program performance.

There are papers addressing overall physician staffing, opinion -based projections of unmet overall physician needs, inadequacy of current funding for Preventive Medicine training programs, barriers to recruitment of physicians into the specialty of Preventive Medicine, demand for physicians with specialty training in public health and preventive medicine in the current public health marketplace, and public health and preventive medicine competencies that should be incorporated into the training of all physicians.

Conclusion: There are major leadership and staff deficiencies in state and local health departments that should be immediately addressed to better meet local, state and national needs for public health services and policy guidance. There is also need for additional research on the workforce issues noted above.

Recommendations:

1. While there may be disagreement with the proposal that the gold standard for professional qualifications for a state or local health director should be a physician, board certified in GPM/PH, whose practicum training was provided in a state or local health department – there should be no disagreement with the proposal that professional qualifications of state and local health directors is a topic worthy of serious discussion.
2. While additional research is needed with regard to a number of pertinent issues, action to address these issues should proceed while the needed research is done, due to the urgency of currently unmet need.
3. Steps should be taken to assure adequate funding of GPM/PH training programs, with special emphasis on the training of physicians for leadership positions in state and local health departments. Federal funding needed is estimated at ten to twenty times the current level of federal support.
4. Steps should be taken to eliminate barriers that now preclude the hiring of specially trained public health physicians into state and local health department positions best filled by physicians with this specialty training.

Introduction

This literature review was conducted to determine the degree to which currently available published literature provides useful guidance as to optimal physician staffing of state and local health departments to enable these agencies to best meet local, state and national needs for public health services and policy guidance.

Physician needs are divided into three categories: 1) leadership/policy/management; 2) epidemiology/disease control; and 3) clinical. Statistical projections and training needs were considered for the first two categories, as well as barriers that must be overcome if the optimal staffing is to be secured.

For purposes of this paper, the “gold standard” for professional qualifications for agency directorship is designated as a physician board certified in General Preventive Medicine/Public Health (GPM/PH) whose practicum training was provided in a state or local public health agency.

Components of the Public Health Infrastructure

In its 1988 report entitled *The Future of Public Health*,¹ the Institute of Medicine (IOM) defined the mission of public health “. . . as fulfilling society’s interest in assuring conditions in which people can be healthy.” This definition continued to specify “The mission of public health is addressed by private organizations and individuals as well as by public agencies. But the governmental public health agency has a unique function: to see to it that vital elements are in place and that the mission is adequately addressed.”

In both the 1988 and 2003 reports on the future of public health,^{1,2} IOM considered the “public health infrastructure” to be all-inclusive. The major components, as listed in the Table of Contents to the 2003 report² included government, the community, the healthcare delivery system, employers, media and academia – all considered at local, state and national levels.

This literature review will limit itself to state and local health departments.

Services and Policy Guidance that Should be Provided by Health Departments

The Public Health Functions Steering Committee (PHFSC)³ listed the following as the six public health programmatic functions:

1. Prevents epidemics and the spread of disease
2. Protects against environmental hazards
3. Prevents injuries
4. Promotes and encourages healthy behaviors
5. Responds to disasters and assists communities in recovery
6. Assures the quality and accessibility of health services

The 1988 IOM report¹ report introduced the concept that “assessment,” “policy development,” and “assurance” as unique and essential services of state and local health departments. These concepts were further elaborated in 1994 by the PHFSC³ into the following list:

The Essential Public Health Services:

1. Monitor health status to identify community health problems
2. Diagnose and investigate health problems and health hazards in the community
3. Inform, educate and empower people about health issues

4. Mobilize community partnerships to identify and solve health problems
5. Develop policies and plans that support individual and community health efforts
6. Enforce laws and regulations that protect health and ensure safety
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable
8. Assure a competent public health and personal health workforce
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services
10. Conduct research to attain new insights and innovative solutions to health problems

The 1988 IOM report¹ summarized state public health service responsibilities in the following terms:

“States are the principal governmental entity for protecting the public’s health in the United States. . . . State health agencies collect and analyze information; conduct inspections; plan; set policies and standards; carry out national and state mandates; manage and oversee environmental, educational and personal health services; and assure access to health care for underserved residents; they are involved in resources development; and they respond to health hazards and crises. . . . States carry out most of their responsibilities through their police powers . . .” Clearly, the legal authority and responsibility for such services and protection resides at the level of state government.”

The same 1988 IOM report,¹ summarized the service responsibilities of local public health agencies in the following terms:

“Local health departments are the ‘front line’ of public health agencies. They are generally responsible for direct delivery of public health services to the population. They conduct communicable disease control programs; provide screening and immunizations; collect health statistics; provide health education services and chronic disease control programs; conduct sanitation, sanitary engineering, and inspection programs; run school health programs; and deliver maternal and child health services, public health nursing services, mental health services, and other home care and ambulatory care services. Local health departments carry out their activities under authority delegated by their state or by local jurisdictions. . . .”

The Extent to Which the Current Public Health Infrastructure is Meeting Local, State and National Need for Public Health Services and Policy Guidance, with Special Emphasis on State and Local Health Departments

The 1988 IOM report¹ report described the state of public health in the United States in the following terms:

“Public health is a vital function that is in trouble. . . . public health in the United States has been taken for granted, many public health issues have become inappropriately politicized, and public health responsibilities have become so fragmented that deliberate action is often difficult, if not impossible.” This IOM report¹ further states: “. . . these problems reflect a lack of appreciation among the general public and policymakers for the crucial role that a strong public health capacity must play in maintaining and improving the health of the public. Attention is focused on specific health problems such as AIDS, exposure to specific toxic agents, or substance abuse. But these specific foci of interest lead to episodic actions, not the sustained effort that is needed. The necessary public health capacity to cope with the immediate, enduring, and impending threats to health cannot, in the committee’s view, be turned on and off as particular health problems arise and receive attention. This necessary capacity must be nurtured and supported by the society that reaps the benefits; it requires competent people, effective leadership, a scientifically sound knowledge base, the tools to monitor health problems and measure progress, a productive organizational structure, adequate financial resources, and a legal foundation that supports effective action, all motivated by a vision of the public’s health that is understood and supported by the public. . . . health status will fall short of the achievable if public health is not strong.”

The PHFSC³ in its extensive series of reports and documents, currently posted on its website, goes into great detail as to workforce composition and curricula, but does not separately address educational or competency needs or professional qualifications for agency directors. It does not project or estimate in

qualitative or quantitative terms the degree to which or ways in which adoption of their recommendations would improve the performance of our public health infrastructure, or even recommend future research to address these issues.

Their presentation of competencies needed to address each of their ten Essential Public Health services,^{3,4} strongly emphasize communication, policy development/program planning and cultural skills and de-emphasize medical and public health science-based knowledge and skills

Methods

This literature review was based on papers in the July/August issue of *Health Affairs*, work previously done by Joel Nitzkin, IOM reports on the public health infrastructure, COGME documents and personal communications.

Review of Workforce Literature

Professional Qualifications of Agency Director and/or Management Team

The only directorship competencies for public health agency directors identified by IOM in their 2003 report⁵ were from the National Public Health Leadership Development Network⁶ and the Public Health Service Commission of Canada.⁷ Both specified only leadership, policy and management skills, but did not specify any knowledge or background in public health or any form of health or medical science. Neither provided any evidence to justify the competencies listed. This deficiency is troubling, given the decisions that have to be made by public health agency directors especially when dealing with epidemics and other emergencies. This same pattern of emphasis on leadership and policy/management skills with de-emphasis on science-based medical and public health skills has also been noted in the PHFSC guidance documents.³

Findings from the 2005 State Health Officer Survey of the Association of State and Territorial Health Officials (ASTHO)⁸ show that, of 57 state and territorial jurisdictions, 24 (42%) require that the health official have an MD. Of these, 10 (42%) also require an MPH or experience in Public Health. Despite this lack of a physician requirement, 30 of the 57 health officials (53%) have an MD, and 5 (17%) of them are board certified in a Preventive Medicine specialty. Currently, only 15 states require that heads of local health departments be physician.^{9,10} These data suggest that state hiring authorities are generally unaware of the specialty of GPM/PH or of the advantages of hiring physicians with such training.

Data from the 2005 survey of local health departments (LHDs) by the National Association of County and City Health Officials (NACCHO)¹¹ showed a marked decline in the number of LHD top executives holding medical degrees. In 1992-93, 37% of all LHD top executives reported medical degrees (MD, DO, DDS, DVM); in 2005, only 17% of all LHD top executives reported medical degrees (MD, DVM, DDS). Of jurisdictions with population in excess of 500,000 persons, 43% employed a physician as the top executive. In jurisdictions serving a population less than 25,000, only 9% did so. Information was not provided with regard to additional training or experience in public health or GPM/PH board certification. In a personal communication in June of 2006,¹¹ the Executive Director of NACCHO presented what NACCHO felt to be roles that a public health physician can play in a local health department. The “Uniquely MD” skill set was purely clinical, and did not include use of medical knowledge to assess and address health issues on a group or community basis, medical epidemiology, disease control, or more effective detection and response to bioterrorism or other emergency/disaster situations. There was no

recognition of the possibility that a physician trained in GPM/PH might bring yet additional unique physician skills to the public health agency.

The July/August 2003 issue of *Health Affairs* includes an article by Laura Kahn¹² in which Dr. Kahn urges physician directorship of health departments. She supports this proposal through use of three case reports of public health agency response to dangerous communicable diseases. The first example related to a case of smallpox in New York City in 1947 that raised the possibility of an epidemic. Dr. Israel Weinstein, then City Health Director took immediate and decisive action which rapidly led to the vaccination of more than 6 million people, and limited spread of smallpox to twelve cases, only two of which were fatal. The second episode related to a waterborne outbreak of *Cryptosporidium* illness from the Milwaukee city water supply. This went unrecognized by the health department until the outbreak was well underway, despite many complaints to the health department. Once recognized, response was further delayed, as the non-physician health commissioner attempted to negotiate a response with the water works director. In the end, the mayor made the medical decision to issue a boil water order until the safety of the city water supply could be re-established. This outbreak sickened 400,000 people and 100 died. The third example related to a 2001 anthrax attack in Mercer County, New Jersey. Absence of local health department public health physician leadership led to a delayed and muddled public health response, public panic and a major burden placed on private healthcare providers. In the end, there were seven anthrax cases. Fortunately, no one died. The Kahn paper is unusual in that it was published. Experienced public health physicians can provide other examples of adverse consequences that could have been prevented by a more decisive and effective public health response that would have occurred had a physician well trained in public health been director of the public health agency.

The July/August 2006 issue of *Health Affairs* was dedicated to prevention and the public health infrastructure. The prologue¹³ notes that “effective public health leadership requires integrating science-based interventions with community preferences.” This suggests a need for public health agency leadership with both science-based and management skills – a direct contrast to views noted above emphasizing only leadership/management skills or leadership by physicians without the requisite public health and policy/management training.

A paper by Salinsky and Gursky¹⁴ decries the lack of leadership in public health agencies and notes:

“Most people who obtain advanced public health degrees pursue academic and research careers, instead of practicing governmental public health. Government rarely remunerates highly skilled public health employees, and, in recent years, has filled public health positions with contract or soft-money slots rather than career positions. Dedicated, but often marginally prepared people function through on-the-job training. The continuity of public health effort suffers as a sizable proportion of this workforce leverages its newly gained skills to obtain higher-paying positions in hospitals, private laboratories, industry or academe.”

A paper by Fairchild et al¹⁵ addresses the need for state and local government have the capability to rapidly and correctly decide when mandatory evacuation is needed and how best to carry it out. It is difficult to imagine how state or local government can secure and maintain this capability without well trained public health physicians in key policy/management roles within their respective health departments.

In the paper by Lurie et al on Public Health Preparedness¹⁶ they note:

“In our tabletop exercises, we repeatedly observed that strong leadership trumped all other factors in determining how jurisdictions fared when presented with a wide range of scenarios related to infectious disease outbreaks. The performance of health departments whose leaders were willing to take responsibility for, and make decisions in a hypothetical situation was far better than those in which the leaders said they would be willing to be “co-in-charge” with others. . . .”

It is hard to imagine a leader better able to take on this role than a public health physician well trained in public health and policy/management in the role of agency head.

In 1997, Gerzoff and Richards published a paper on the education of local health department top executives.¹⁷ In this paper, they note the lack of professional qualifications in local health department top executives, and recommend expansion of short-term state-based leadership and distance learning programs. They do not consider the possibility of hiring better qualified people to fill these positions, or the futility of on-the-job education for agency top executives, many of which will have very short tenures in those positions.

Projected Needs for Physicians in Public Health Settings

General Public Health Workforce Literature

The general public health workforce literature shows that a small and decreasing percentage of public health workers are physicians, and that only a small number of these physicians have and MPH degree or other post-graduate education in public health. None of this literature differentiates physicians board certified in General Preventive Medicine/Public Health (GPM/PH) from physicians whose only post-graduate public health training is an MPH or similar degree.

Even more problematic, from a physician perspective, the currently available public health workforce literature does not differentiate between clinical, epidemiology/disease control and policy/management roles – and the possibility that these different roles have different training needs.

When considering the qualifications of agency directors and “health officers,” the data available show a low and decreasing number of physician leaders. This literature documents these changes, but does not suggest whether these trends are good or bad, in terms of the overall strength of the public health infrastructure.

The events of September 11, 2001 and the anthrax attacks, one month later, brought the need for an effective public health response to our collective attention. Detection and effective rapid response will require training of clinicians and leadership within state and public health agencies by well trained public health physicians, in both disease control and policy/management roles. The urgency of these needs is the subject of a now-extensive literature. Two papers, one published before September of 2001 by Khan and Ashford¹⁸ and one after, by Chen et al¹⁹ are suggested as introductions to this body of literature.

AMA, PM, and COGME Perspectives

Physician distribution data from the American Medical Association, covering the period 1975 through 2004²⁰ show that the total number of physicians in the United States increased from 393,742 to 884,974 (+125%). Using self-designation, rather than board certification as the measure, the number of General Preventive Medicine Physicians increased a similar amount, from 789 to 2,048 (+160%). The number of Occupational Medicine Physicians stated about the same – 2,355 to 2,674 (+35%) – but the number and percentage of Public Health & General Preventive Medicine physicians went down from 2,665 to 1,555 – a 42% reduction in absolute numbers, and a reduction in GPM/PH physicians from 0.7% of the physician workforce to 0.2%. These data suggest that the only real reduction in Preventive Medicine physicians was in the category most pertinent to state and local health departments.

Nitzkin, et al, in a 1999 survey²¹ considered the possibility that lack of demand in the employment marketplace may be the primary reason for this decline. Advertisements for medical and public health jobs were surveyed over a two-year period. All jobs that appeared to benefit from medical knowledge plus a group/population/community approach to health-related issues was identified as a job that could best be filled by a physician with specialized training in Preventive Medicine (GPM or GPM/PH). Of 18,500 ads screened, 1,427 met these screening criteria. Of these, 104 considered the MD/DO/PhD degree optional. Only 145 of the 1,427 (106%) required or preferred a public health, preventive medicine or management degree. Only one ad (0.07% required GPM board certification. None expressed a preference for applicants with GPM board certification. These data were interpreted as a lack of awareness of PM medical specialties among both medical and non-medical hiring authorities. When considered from another perspective, this also means that GPM board certification is of little or no value when competing for the vast majority of GPM-related jobs.

This report is focused on the need for GPM/PH physicians in state and local health departments. The following background material is provided as an orientation to the larger specialty of Preventive Medicine and the workforce literature related to this family of medical specialties.

The medical specialty of Preventive Medicine is overseen by the American Board of Preventive Medicine (ABPM). It consists of three related medical specialties – tied together by common interests in prevention and a population orientation to health issues. The three are General Preventive Medicine/Public Health (GPM/PH), Occupational Medicine (OM) and Aerospace Medicine. The most recent estimates from the American College of Preventive Medicine (ACPM – the national organization representing specialists in all Preventive Medicine specialties) are as follows.¹⁰

Enumeration of Need for Preventive Medicine Physicians

Specialty Area of Preventive Medicine	No. Needed	No. Board-Certified	Residents for 2005
General Preventive Medicine/Public Health	6,120	3,634*	183
Occupational Medicine	6,071	3,079*	130
Aerospace Medicine		(1,117*)	(36)
Total	12,191	6,713	313

* *These numbers reflect living diplomats in 2004 and do not take into account those who are retired or not working.*

GPM/PH and OM show similar numbers of trainees and numbers of board certified physicians, with national need projected as approximately double the current number board certified. Numbers in Aerospace medicine are much smaller, and with no projection of national need. The vast majority of American Aerospace medicine physicians has been trained in and is employed by the Air Force.

The Council on Graduate Medical Education (COGME) is the organization that oversees medical specialty training for all medical specialties.

From both PM and COGME perspectives, there is a severe shortage of physicians with specialty training in GPM/PH, and this shortage is getting worse. This is usually stated in terms of the numbers of GPM/PH trainees and the funding to support such training programs. Much of this seems predicated on the idea that

all physicians working in public health settings should be board certified in preventive medicine, regardless of their role within the public health agency.

A related issue is the shortage of black physician specialists in Preventive Medicine. A 1990 paper by Blumenthal and Taylor²² describes this situation in the following terms:

“The disparity in health status between black and white Americans exists chiefly because of an excess of preventable disease in blacks. This situation calls for an increase in preventive services for blacks, services which might best be implemented or directed by black specialists in preventive medicine. However, there exists both an absolute shortage of preventive medicine specialists (of all races) and a relative shortage of black preventive medicine specialists. The immediate need for additional black specialists exceeds the total U.S. preventive medicine corps.”

The COGME Third Report to Congress, released in October, 1992²³ reiterated this perception of a general shortage in Preventive Medicine physicians (GPM/PH, OM and Aerospace), noted four qualified applicants for each training slot, and identified the major barrier to meeting this need as the “virtual absence of GME funding.”²³ This same point is reiterated in expert-opinion-based papers published in 2000 by Dorothy Lane²⁴ and Tilson et al in 2001.²⁵

A series of COGME reports to congress and resource papers, spanning the period 1990 through 2000, presents the shortage of Preventive Medicine physicians in the context of a larger shortage of primary care physicians and unmet need for physician manpower serving minority, indigent and otherwise underserved populations. They also reference what they consider to be a crisis in terms of lack of funding for physician training in these specialties.^{9,23,26,27}

The COGME compendium of resource papers released in August 2000⁹ includes a paper by Jerilyn K. Glass, a COGME staff physician. Excerpts from her paper, entitled “Physicians in the Public Health Workforce” include the following:

1. Shortly after schools of public health were first accredited (1946-47), the majority of students admitted for Master’s degrees in public health were physicians (61%). By 1965-66, the percentage shrunk to 23%, by 1978-79 to 11%.
2. Data from the AMA Masterfile indicate that the percentage of active specialty-classified physicians who self-designate in preventive medicine underwent a similar 50% decline between the mid 60’s and late 70’s from 3.2% in 1963 to 1.6% in 1978.
3. . . . more recent data, also from AMA document a further decrease to 0.9% in 1997.

The Glass paper⁹ also references the Title VII funding of preventive medicine programs currently (late 1990s) averaging between \$1.6 and \$2 million per year. Our current projections of need for such funding, from this and other federal sources is in the range of \$24 to \$48 million – a ten to twenty-fold increase in such funding. Basically, Title VII, administered by the Bureau of Health Professions of HRSA, is the major federal source of funding for preventive medicine residencies because the major portion of the training program does not relate to seeing patients in a clinic or hospital setting. Most other medical specialty training is supported by Medicare on the basis of the clinical services provided.

The fifteenth COGME report, released in December 2000²⁷ presents four different possible approaches for funding graduate medical education (GME) in all medical specialties. The first, the “Health Care Provider” model considers these education costs in the context of healthcare delivery. This is the model used by Medicare for funding of most other medical residency programs. The second, an “Education Model,” directly funds GME as an educational cost. This is the model used by HRSA in its current funding of Preventive Medicine residency programs. With this model, funding is considered year by year

in terms of incremental increases or decreases in prior year funding, without consideration of other factors. The other two, a “Planning Model” and “Performance Model” are proposed as new approaches based on perceived needs for different medical specialties and performance of the GME programs in meeting these needs. ACPM and the American Association of Public Health Physicians are now recommending consideration of a Planning/Performance basis for funding Preventive Medicine training because such training is not directly linked to patient encounters in clinical settings, and because of the inadequacy of the current Title VII budgeting methodology.

There is no national standard for the threshold at which the population density of a local health department necessitates physician oversight. A ratio of 1 per 50,000 is often quoted; This historical number dates back from 1945 when Dr. Haven Emerson made recommendations that local health services be provided in departments serving no less than 50,000 people.²⁸ At that time, the health officer was typically a physician.²⁹ In 2002, Nitzkin opined “at a minimum . . . every regional or local director serving a population in excess of 100,000 persons [should] be a fully qualified PH/PM physician.”³⁰

Discussion and Conclusions

The literature shows a public health structure in disarray, an infrastructure unequal to the task of adequately providing needed public health services and policy guidance.

The literature also demonstrates the low and declining numbers of GPM/PH physicians and lack of adequate Preventive Medicine training slots across the entire range of PM specialties.

There is no literature addressing the performance of state and local health departments with regard to any of the following:

1. The professional qualifications of the agency director and/or management team.
2. The professional qualifications of staff within specialized program activities
3. A standardized list of services, protection and policy-guidance activities
4. The changes that need to be made in the public health infrastructure (other than additional funding) to enable us to effectively and cost-efficiently meet our collective needs for public health services, protection, and policy guidance.
5. There is no literature addressing public health infrastructure needs for physician staffing by any categorization of specialized physician services.
6. There is no literature adjusting the numbers of GPM/PH or EIS physicians to be trained for the time to be spent by many of those physicians seeing patients in the health department clinics, especially in smaller local health departments. Since some of these physicians spend 50% or more of their time seeing patients in the clinic, one GPM/PH physician does not necessarily provide one full time equivalent of GPM/PH service.

There is literature addressing the following issues:

1. Overall physician staffing of state and local health departments
2. Opinion -based projections of unmet overall physician needs within state and local health departments
3. Inadequacy of current funding for Preventive Medicine training programs.

4. Barriers to recruitment of physicians into the specialty of Preventive Medicine
5. The demand for physicians with specialty training in public health and preventive medicine in the public health employment marketplace.
6. Public health and preventive medicine competencies that should be incorporated into the training of all physicians.

Recommendations

1. While there may be disagreement with the proposal that the gold standard for professional qualifications for a state or local health director should be a physician, board certified in GPM/PH, whose practicum training was provided in a state or local health department – there should be no disagreement with the proposal that professional qualifications of state and local health directors is a topic worthy of serious discussion.
2. While additional research is needed with regard to a number of pertinent issues, addressing these issues should proceed while the needed research is done, due to the urgency of currently unmet need.
3. Steps should be taken to assure adequate funding of GPM/PH training programs, with special emphasis on the training of physicians for leadership positions in state and local health departments.
4. Steps should be taken to eliminate barriers that now preclude the hiring of specially trained public health physicians into state and local health department positions best filled by physicians with this specialty training.

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