



JLN, MD Associates, L.L.C.

4939 Chestnut Street, New Orleans, LA 70115-2941

jln@jln-md.com <http://jln-md.com>

Consultant and Expert Witness - Preventive Services in Healthcare and Public Health Settings

Joel L. Nitzkin, MD,

office phone: (504) 899 7893

MPH, MPA, DPA, FACPM

toll-free phone: (800) 598-2561

Principal Consultant

cell phone (504) 606-7043

facsimile: (504) 899-7557

September 14, 2006

Training Physicians for Public Health Careers:
 issues, needs, barriers, training needs, and proposed transition plan

Joel L. Nitzkin, MD

primary author and editor on behalf of the

American Association of Public Health Physicians (AAPHP)

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Disclaimer:

This paper has been generated by Joel Nitzkin (JLN), with input from the AAPHP Officers and Board and selected other individuals (see acknowledgments). Due to the deadline for getting materials to the IOM Committee on Training Physicians for Public Health Careers for the October 5 meeting, and the timing of an ACPM survey of Preventive Medicine Program Directors, this paper is incomplete and the AAPHP Board members have not yet had the opportunity to review this hopefully semi-final draft. JLN, as primary author reserves the right to make final modifications to the narrative and statistical projections prior to the presentation to the Committee. This draft of this paper, with the two associated papers, is being circulated to the AAPHP officers and board and selected other individuals concurrent with its being shared with IOM staff for inclusion in the October 5 agenda package.

Abstract

This is one of three papers prepared for an AAPHP presentation to the IOM Committee on Training Physicians for Public Health Careers at their October 5, 2006 meeting. The other two are a literature review of public health physician workforce-related literature, and an editorial urging upgrading of professional qualifications for state and local public health agency directors and their key staff.

The introduction identifies issues and barriers that must be addressed if we are to upgrade the qualifications of public health agency leaders, provides a classification of physician roles in public health settings, and describes current and desired training programs.

Physician roles within the public health infrastructure, for purposes of this set of papers, are classified as Leadership/policy/management (Leadership), medical epidemiology (Epi), and clinical roles. Projections are limited to the Leadership and Epi roles, since these are the roles requiring specialized public health training. Physicians trained in these two roles in preventive medicine (GPM/PH) and Epidemic Intelligence Service ((EIS) programs are considered “public health physicians” (PHPs). Clinicians working in public health settings are not included in these projections since they do not necessarily require specialized public health training beyond that recommended for all clinicians.

This paper then projects PHP needs in state and local health departments, healthcare, and academic settings. These projections are preliminary, due to the limitations of the objective data currently available. The projections herein should be good enough to reasonably approximate the unmet need and facilitate initial steps to address this need, as the studies are done to generate more precise projections.

PHP needs for all other public-health-related occupational settings (other than those noted above and federal civilian and uniformed agencies) are projected as 10% of the needs projected above. Separate studies should be conducted to project the needs for PHPs in federal agencies, and the federal or federally-sponsored training capacity needed to meet those needs.

This report recommends a “basic” expansion over a three year period, then further expansion to the “optimal” level over the following seven years. The three years allocated to basic expansion should provide ample time to conduct the more definitive studies needed to confirm, deny or adjust projections for yet additional training capacity.

Phase 1, the first three years, projects generation of an additional 135 PHPs from GPM/PH residency programs each year (a 74% increase over the current capacity of 183 PHPs per year). This will address 50% of the estimated unmet need for PHPs in state and local public health agencies. Phase 1 activities would also include outreach to employers, additional research, and related activities at a total estimated cost of \$30 million per year. The estimated cost of the expanded training is, based on a projected average cost per year of \$100,000 per PHP trainee per year for the MPH and Practicum years. The higher cost of EIS training (currently estimated at about \$145,000 per year for each of the two years of EIS assignment, inclusive of agency overhead) is not included in these projections. This “basic” expansion would be accomplished by increasing funding to already established GPM/PH residency training programs.

Phase 2 would further expand training capacity to fully meet the currently unmet needs of local and state health departments, non-federal healthcare delivery systems and academia, and bring our annual production off PHPs to slightly above 1,000 per year. This would be done through both expansion of current programming and development of new residency programs. The total annualized cost of this final phase of expansion is projected at about \$150 million per year.

Introduction

The IOM Committee on the Training of Public Health Physicians is now developing the latest in their series reports on how best to strengthen our national public health infrastructure to more effectively meet this nation's needs for public health services and policy guidance.

This paper is for presentation to this IOM Committee at their October 5, 2006 meeting.

This report addresses public health physician (PHP) needs in state and local health departments, healthcare and academic settings. These selections were made on the basis of the American Association of Public Health Physicians (AAPHP) perception that state and local health departments make up the heart of our public health infrastructure.

PHP needs for all other occupational settings (other than those noted above and federal civilian and uniformed agencies) are projected as 10% of the needs projected above. Separate studies should be conducted to project the needs for PHPs in federal agencies, and the federal or federally-sponsored training capacity needed to meet those needs.

This is one of three papers prepared for the AAPHP presentation to the IOM Committee. The other two are a review of public health physician workforce-related literature, and an editorial urging upgrading of professional qualifications for state and local public health agency directors and their key staff.

Problem Statement

From an AAPHP perspective, **a major root cause of the disarray in public health is lack of technical sophistication of many state and local public health leaders.**

In some states and localities, it is hard to avoid the impression that public health directorships are seen as plums to be used for political patronage. This, in turn, implies that the appointing elected official does not understand why his or her jurisdiction might benefit from more professionally qualified public health Leadership.

The most common pattern, at both local and state levels, appears to be either a non-physician agency director with a clinically-oriented physician advisor, or a clinical physician, with or without and MPH degree with an administrative assistant. Neither of these patterns (again, from an AAPHP perspective) provide the unique skills or quality of policy guidance that can be provided by fully trained specialized public health physicians, with General Preventive Medicine (GPM/PH) and/or Epidemic Intelligence Service (EIS) training and mentored experience.

The qualitative enhancement in skills and ability conferred by PHP leadership training are most important in the following areas:

1. Emergency/Disaster preparedness and response.
2. Issuance and management of isolation and quarantine orders
3. Control of communicable and major chronic diseases, injury prevention, and enhancement of maternal and child health and general community wellness.
4. Public Health/Community Health policy guidance to be provided to health insurance entities and healthcare delivery systems

5. Partnering between public health agencies, healthcare delivery systems and communities in pursuit of shared health objectives.
6. Effective direct and indirect capture of dollars, staff, and legal authority from local and state legislative bodies, federal agencies and private sector entities.
7. Research to further enhance public health protections and both clinical and community-based preventive services.

Success in these six areas will provide handsome community benefits and reduce, if not totally eliminate, the perception of “disarray” in our public health infrastructure.

The same appears to be true for those portions of our public health infrastructure lodged within healthcare and other settings – where the value of preventive and quality assurance services is well recognized, but, somehow not translated into the need for specially trained physicians.

Public Health Physician (PHP) Roles and Training Programs

This paper divides physician roles into the following three general categories, each with its specific training and staffing needs.

1. **Leadership/Policy/Management:** The first of the three roles is that of the agency or program leader, policymaker and manager. In these roles, the physician uses medical knowledge and epidemiologic skills to guide program and agency policy, while serving as leader and manager. The best training for this consists of GPM/PH residency, preferably with the practicum in a health department setting, with special attention to policy and management skills. This a three-year medical residency, with one year of purely clinical training, an academic year for the MPH degree, and a “practicum” year in which the trainee applies preventive medicine and public health skills under the watchful eye of skilled mentors, while receiving additional didactic training.
2. **Epidemiology:** The second of the three is technical in nature – the role of a medical epidemiologist addressing disease control, bioterrorism and/or emergency/disaster preparedness/response. These physicians require both didactic training and supervised residency/practicum training – as may be provided by the Epidemic Intelligence Service (EIS) or a GPM/PH residency.
3. **Clinical:** The third of the three, and the one with little or no need for specialized public health training, is seeing patients in health department clinics. These services are little different from provision of clinical services in other settings. In most cases, such services can be adequately provided by clinicians with no specialized public health training beyond a brief on-the-job orientation to the public health agency. This having been said, it is important to note that all physicians, regardless of medical specialty, should receive a basic level of public health training including, but not limited to the clinical preventive services appropriate to that medical specialty the role of all physicians relative to bioterrorism, emergency and disaster response, and enough knowledge of public health systems to know what diseases to report, and how to report them.

Opinions vary within the Preventive Medicine community as to whether clinicians working in public health settings should or should not be board certified in Preventive Medicine. Training of these clinicians would provide additional leadership and surge capacity, especially when responding to disasters. For purposes of this paper, however, this will not be considered because providing additional leadership and

surge capacity for already well staffed agencies is lower on the national priority list than providing basic leadership capacity in states and localities currently lacking such capacity.

AAPHP considers GPM/PH board certification, with practicum training in local or state health departments or selected federal agency settings, as the “gold standard” for physician training for major Leadership roles across the entire public health infrastructure.

For Epi jobs (primarily in disease control and emergency response programs) there are two forms of training that traditionally have been considered “gold standard.” One is the GPM/PH residency. The other is a two-year tour of duty in the Epidemic Intelligence Service (EIS). Both provide ample opportunity for delivery of public health services under the watchful eye of a skilled mentor. The EIS provides more in-depth training and experience in disease control programming, but virtually no training or experience for policy and management roles.

This past year there has been a substantial blurring of the differences in training requirements between Leadership and Epi roles. In June of this year (2006), the Conference of State and Territorial Epidemiologists (CSTE) posted its new compendium of “Applied Epidemiology Competencies for Governmental Public Health Agencies on its web site. This compendium specified skill sets within eight skill domains for three tiers of Epi staff – entry level, mid-level, and senior –supervisor/manager and senior scientist. Six of the eight skill domains (Communication, Community Dimensions of Practice, Cultural Competency, Financial and Operational Planning and Management, Leadership and Systems Thinking, and Policy Development) are leadership/policy/management skills. Since these are not topics covered in depth in the Epidemic Intelligence Service, at least some senior staff within the Centers for Disease Control (CDC) are rethinking the premise that a two-year EIS assignment, without additional training and mentorship is adequate training for Epi leadership positions in state and local health departments and other public-health-infrastructure settings.

There is yet another training-related issue that the IOM committee should be aware of. The subspecialties of Public Health and clinical Preventive Medicine were merged in 1983 because of the declining number of board certified public health physicians being hired as directors of local and state health departments. This merger created the then-new title of “General Preventive Medicine/Public Health” (GPM/PH). On an informal basis, however, PM residency programs still differ in their emphasis relative to public health administration and purely clinical preventive medicine. While the basic medical science, epidemiologic and biostatistical competencies are the same for both groups, the leadership/policy/management skill sets are much more prominent in the public-health oriented programs, and receive less attention in the purely clinical programs.

As the IOM considers expansion of PHP training programs to meet needs within the public health infrastructure, AAPHP will be advocating for a clearer and more formalized separation of the public health and purely clinical training and certification programs within the specialty of Preventive Medicine. AAPHP will also be advocating within the American Medical Association (AMA) for formal recognition of leadership/policy/management and Epi work, when done by physicians in public health settings, as the definitive practice of the medical specialty of Preventive Medicine. This latter step is needed to dispel the common misconception that physicians who do not see individual patients in clinical settings are doing something other than the “practice of medicine.”

Literature Review:

A literature review is being provided by AAPHP to the IOM committee as a separate document. This unusual step is being taken because the currently available literature provides very little in the way of usefully guidance relative to the issues being addressed in this paper. A summary of this review is as follows:

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 LEADERSHIP or EPI 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 LEADERSHIP physician does not necessarily provide one full time equivalent of LEADERSHIP service.

There is an urgent need for research to address the issues noted above.

Underlying Problems

Professional qualifications for leadership positions in the current public health marketplace

There is no consistent set of professional qualifications for major Leadership positions in state and local public health agencies. MPH degrees are often, but not always required Board certification in GPM/PH is rarely mentioned. There is not even consistency as to which positions do and do not require or prefer physician training. The workforce studies pertinent to public health physicians do not differentiate between purely clinical, epidemiologic and leadership/policy/management positions. Neither do they separately tabulate physicians who may or may not have had GPM/PH practicum training or board certification in GPM/PH.

There are two major aspects of the practicum that are needed by conventionally trained physicians. The first is the ability to address and manage health problems on a population basis, rather than one person at a time. The second relates to the idea that, in a public health setting, a physician is a member of a multi-

disciplinary team, as opposed to being the person who writes the orders for others to follow. These two differences require both different approaches to assessment of health problems and acculturation to working in very difficult occupational environments. There is a definite movement in clinical training and practice to both team-work and quality considerations on a group-of-patient basis. This movement will lessen the severity of the acculturation issue as time goes by. *****{CS0706}

Clinical Physicians with an MPH

Physicians without specialized public health training beyond an MPH are not considered “Public Health Physicians” for purposes of this communication. Despite common perceptions to the contrary, a clinician with an MPH is not a specialized public health physician. He or she is a physician who could become a public health physician if he or she secures a year or more of hands-on public health work under the supervision of a skilled mentor as offered in a GPM/PH practicum or EIS assignment. The supervised mentorship is absolutely critical in this regard because of real-life experience with a number of MD/MPH physicians, who, believing they knew all there is to know about public health, stepped into major Leadership positions, then performed very badly. While some have performed well, most have not, especially when compared to the accomplishments of more qualified public health physicians. The evidence of this assertion is totally anecdotal; with more definitive written evidence theoretically possible, but fraught with legal and other difficulties.

The Master’s Degree in Public Health (MPH) program is a one-year basic introduction to a wide range of public health topics, with the possibility of a few extra courses in an area of major. It does not confer, as many employers presume, in-depth knowledge and demonstrated ability in dealing with public health issues. Many physicians, and other health professionals, secure an MPH degree to enable them to secure public health jobs. Some of these professionals, unimpressed by the relative simplicity of many of the course offerings, come out of the MPH program with the impression that there is little or no substance to the art and science of public health, beyond what they received in basic medical training. Some seem unable to conceive of the possibility that there might be such a thing as advanced public health skills and abilities that would enable them to do an even better job as a state or local health director, or in another major public health Leadership position.

The MPH, to date, has been a one-year basic introduction to public health designed to prepare people for yet more public health training – either in the form of a one-year apprenticeship under the supervision of a skilled mentor or additional academic training leading to research-oriented (PhD) degree. This problem has been recognized within the public health academic community, and discussions are now underway to upgrade course requirements and possibly require three months of supervised practical experience in addition to the current classroom training. AAPHP sees this proposal as one of value for non-physician trainees, but no substitute for a full year of mentored public health practice plus the advanced didactic training provided by GPM/PH residency practicums.

Scope and Limitations of this Communication

Included in this Communication

The major statistical projections of need and training capacity in this communication are limited to the needs for specially trained Leadership and Epi physicians in state and local health departments, civilian, non-academic healthcare settings, schools of public health and medical schools.

The training to be discussed in this report and cost estimates will be limited to the MPH and Practicum years of current GPM/PH residency training programs. This anticipates that the purely clinical year will be covered with healthcare-delivery-related funding.

Excluded from this Communication

This communication does not address the need for purely clinical physicians within public health agencies or physician needs in Occupational or Aerospace Medicine –kindred public-health-related specialties also certified by the American Board of Preventive Medicine.

Federal-Civilian and Military agencies have their own unique sets of training needs and jobs. These should be subjected to separate studies and projections. One federal program – the Epidemic Intelligence Service (EIS) has been considered in this report, but only so far as it meets the needs of state and local health departments, non-federal healthcare, and academic segments of the public health infrastructure.

Industrial, correctional, domestic training for international work, non-profit, pharmaceutical, and other employment settings for PHPs are important, but low in numbers of employment slots for PHPs. On a purely empiric basis, the PHP training needs for all of these settings are estimated as approximately equal to 10% of the need for PHPs in public health, healthcare and academic settings.

Public Health Training that Should be Received by all Physicians

All physicians should receive a basic level of public health training in medical school and in continuing medical education programs. They should all know and be able to deliver the immunizations, counseling and other preventive services appropriate to their clinical specialty and medical practice. They should also know about reportable diseases, and know how to report them to public health authorities. Finally, they should also be able to recognize situations (reportable diseases, outbreaks, disasters, etc) requiring follow-up by specialized public health staff. These needs are addressed in this report only in terms of the need for PHP faculty in schools of medicine.

Jobs that should be filled by PHPs rather than non-physicians with public health training

For purposes of this communication – the following guidelines are used relative to the roles to be played by PHPs:

1. Any position that could best be filled by a person with a physician's understanding of human biology, the causation and natural history of health conditions and the efficacy of preventive and therapeutic measures is best filled by a physician.
2. Executive positions requiring both the expertise noted above plus specialized public health and management expertise are best filled by physicians.
3. Senior Epi and disease control positions, with implications for isolation, quarantine and health policy guidelines to be implemented within healthcare delivery systems are best filled by physicians.

Projected Needs for PHPs

1. Public Health Physicians (PHPs) providing specialized epidemiologic/disease control services will be referred to as "Epi PHPs." Those doing policy and management work will be referred to as "Leadership PHPs. While there is considerable overlap between the two groups – these designations will help simplify our projections of need by type of training.
2. The statistical estimates are based on the personal and professional judgment of the prime author of this paper (JLN) as modified by the input of others who have reviewed and commented on this paper they are referenced in the acknowledgments to this report. As noted in the introduction to this report, there is very little in the published literature on the PHP workforce that provides useful guidance with regard to the projections in this paper.
3. The number of public health physicians needed for optimal performance of each public health agency and other organization will depend on the size of the agency, program structure, organizational plan, and overall population of the jurisdiction and the size and distribution of indigent, minority and other high risk sub-populations. The national estimates in this paper will be considered overall averages on a population basis. Because of these determinants, there will be substantial variations between public health agencies of similar size as to the numbers of PHPs required to staff them.
4. Many Leadership and Epi physicians also provide direct clinical care. Therefore the numbers of Full Time Equivalents (FTEs) needed are tabulated separately from the number of PH Physicians to be trained to fill each FTE of specialized public health service.
5. All persons should benefit from the services and protections provided by both types of PHPs, in both community (public health) and healthcare settings. In practical terms, this places an obligation on state public health agencies to provide PHP Leadership and guidance to localities that can not or do not hire their own PHPs.
6. The statistical model in this paper is based on a hypothetical state with a population of 5 million people, and 60 such states and territories in the United States – to approximate a total population of about 300 million.

Local Health Departments

1. **Leadership:** One FTE for the first 200,000 population; a second FTE for the next 300,000; the third for the next 500,000, then one more FTE for per million persons in the jurisdiction, thereafter.
2. **Epi:**
 - a. No Senior Medical Epidemiologists are allocated to communities with less than 200,000 population, with the expectation that either a local Leadership physician or the state agency will cover this need on their behalf
 - b. In communities in the range of 200,000 to 500,000– 0.5 FTE.
 - c. Then, 1 FTE per 1 million population.
 - d. Depending on local and state staffing patterns, and the capabilities of the local Leadership physicians, the need for senior medical epidemiologists might be partially offset by Leadership staffing.
3. The number of PHP’s to be hired per FTE will depend on how much time they spend seeing clinic patients.
 - a. Leadership in jurisdictions with less than 200,000 population -- 4 PHPs per FTE.
 - b. Leadership in jurisdictions with 200,000 to 1 million population– 2 PHPs per FTE.
 - c. Leadership for jurisdictions over 1 million population – 1 PHP per FTE.
 - d. Epi, in all jurisdictions: 1 PHP per FTE.

Table 1: Local Health Department Needs for Leadership PHPs Within Imaginary State, Popn 5m

Jurisdiction	Population per locality	# localities	Total Population	Per Locality		Statewide Total PHPs to be hired	National Total to be trained (60xstate total)
				FTEs	PHPs to be hired per FTE		
Big City	2 million	1	2 million	4	1	4	
Med. City	500,000	4	2 million	1	2	8	
County	100,000	5	500,000	0.5	4	10	
Rural Counties***	25,000	20	500,000	0	0	0	
Subtotal, Local Health Departments						22	1,320

Table 2: Local Health Department Needs for Epi PHPs Within Imaginary State, Popn 5m

Jurisdiction	Population per locality	# localities	Total Population	Per Locality		Statewide Total PHPs to be hired	National Total to be trained (60xstate total)
				FTEs	PHPs per locality		
Big City	2 million	1	2 million	2	1	2	
Med. City	500,000	4	2 million	0.5	1	4	
County	100,000	5	500,000	0			
Rural Counties***	25,000	20	500,000	0			
Subtotal, Local Health Departments						6	360

State Health Departments

1. Even the smallest state public health agency should have at least 2 PHPs, covering at least four roles – Director (or policy advisor to non-physician director), Deputy Director, Epidemiologist and Medical Director.
2. For big city populations -- in excess of 500,000 persons -- the state agency should have 1 FTE Leadership PHP per 2 million big-city population, with each FTE filled by 1 full time PHP.
3. For all other jurisdictions – the state should have 1 FTE Leadership PHP per 500,000 population, with each FTE filled by 1 full time PHP. (anticipating that these would be somewhat less self sufficient than the largest cities).
4. Epi: -- For big city populations -- in excess of 500,000 persons -- the state agency should have 1 FTE Epi PHP per 2 million big-city population, with each FTE filled by 1 full time PHP.
5. Epi: for population of jurisdictions with less than 500,000– 1 FTE per million population with each FTE to be filled by 1 medical epidemiologist. The total would then be rounded up to the nearest whole number, anticipating all staff to be full-time. These physicians would occupy the most senior epidemiology positions.

Table 3: State Health Department Needs for Leadership PHPs Within Imaginary State, Pop 5m

Jurisdiction	Population per locality	# localities	Total Population	Statewide Total		National Total to be trained (60xstate total)
				FTEs	PHPs to be hired	
Big City	2 million	1	2 million	1	1	
Med. City	500,000	4	2 million	1	1	
County	100,000	5	500,000	1	1	
Rural Counties***	25,000	20	500,000	1	1	
Subtotal, State Health Departments					4	240

Table 4: State Health Department Needs for Epi Physicians Within Imaginary State, Popn 5m

Jurisdiction	Population per locality	# localities	Population per jurisdiction	Statewide Total		National Total to be trained (60xstate)
				FTEs	PHPs to be hired	
Big City	2 million	1	2 million	1	2	
Med. City	500,000	4	2 million	1	2	
County	100,000	5	500,000	.5	.5	
Rural Counties***	25,000	20	500,000	.5	.5	
Subtotal, State Health Departments				3	3	180

Civilian Non-Academic Healthcare Delivery Settings:

1. PHP functions in healthcare settings are as follows;
 - a. General policy guidance as to meeting the needs of enrolled populations
 - b. Oversight of clinical and community-based preventive services
 - c. Quality Improvement/Assurance, Patient Safety and Infection Control
 - d. Oversight of accreditation and facility licensure activities
 - e. Community partnerships
 - f. Disaster preparedness
 - g. Liaison to Medicare, Medicaid, public health, and other governmental programs and governmental stakeholders (like county executives, city councils, etc).
2. While they may be done by the same physician, these PHP functions are totally separate from utilization review and from the medical director role in managed care settings (what healthcare physicians usually refer to as “medical management”).
3. For purposes of this set of projections – the healthcare need will be projected as 1 FTE per million covered lives – with 4 physicians in need of PHP training for each of these FTEs. This anticipates that the most common pattern would be individual physicians devoting 25% to 50% of their time to PHP functions, and the rest of their time to hands-on clinical care. Of these, half could be with an Epi background only – for infection control and other disease-control roles, and the other with Leadership training to cover all other specified roles.
4. Per this formula, the state would require 5 FTE, consisting of 10 Leadership PHPs and 10 EPI PHPs, with each, on average, spending 25% of his or her time on PHP activities; the rest seeing patients. The national totals to be trained would be 600 Leadership PHPs and 600 Epi PHPs.

FQHCs and similar community-oriented healthcare programs

As pure guesstimate, I (JLN) would estimate 2,000 such multi-center programs, each with a need for one PHP devoting 25% to 50% of his or her time to PHP Leadership activities – resulting in a need to train another 2,000 Leadership physicians

Academic Settings:

1. AAPHP projects the need for at least 4 FTE per medical school x 125 medical schools. Of the four in this AAPHP projection, 50% would be Leadership, and 50% Epi; with each PHP spending 50% of his or her time on PHP activities. This will require a total of 8 PHPs per medical school, above and beyond the PHP staffing required for the healthcare delivery system served by that medical school. The national totals of medical school PHPs would then be 1,000; with 500 of these playing Leadership roles, and 500 Epi roles. The need for four FTE physicians is based on the projection of one such physician within departments of Preventive Medicine, Internal Medicine, Pediatrics and Family Practice. The basic science needs for Epi and Leadership education could either be covered by non-physician basic science faculty with public health training, or by one or more of the clinical faculty noted above.

2. There are 38 schools of public health, with a guesstimated need for 2 Leadership and 2 Epi PHPs per school, with each PHP full time in his or her PHP activities. This would therefore require 76 Leadership and 76 Epi PHPs to meet the nationwide need. These PHPs would be within the departments of Epidemiology/Biometry and Public Health Administration.
3. GPM/PH and other General Preventive Medicine residency training programs also require PHP faculty, with an estimated minimum of 1FTE per programming for the first two to six residency slots, then another 1 FTE per each additional 6 residency slots per practicum class. National estimation of the numbers of PHPs to fill these roles is complicated by the fact that almost all will be covering clinical and other Leadership and Epi responsibilities for their sponsoring organizations. The most recent data available from ACPM indicate a total of 45 GPM, PH and GPM/PH residency programs, and a total of 183 program graduates for the most recent year for which such data are available. Of the 45, 4 are federal/civilian, military or Canadian. For purposes of this paper, we will estimate that 40 programs, with an average have a total of two more PHPs than their host institutions would have hired in the absence of the residency training program – for a total of 80. Furthermore, for the Phase I expansion, we project the need for another 40, bringing the nationwide total to 120, and allocating them 50% to Leadership and 50% to Epi.

Table 5: Tabular Summary of Selected National Needs for PHPs – (individuals to be hired, not FTEs)

Employment Setting	Leadership	Epi	Total
Local Public Health	1,320	360	1,680
State Public Health	240	180	420
Healthcare Delivery (civilian, non-academic, non-special population)	600	600	1,200
FQHCs and similar community-oriented healthcare programs	1,000	1,000	2,000
Medical Schools	500	500	1,000
Schools of Public Health	76	76	152
GPM/PH public-health oriented residency-training programs	60	60	120
Totals	3,796	2,776	6,572
Rounded totals	3,800	2,800	6,600

Table 6: Simplified Tabular Summary of Selected National Needs for PHPs

– (individuals to be hired, not FTEs)

Employment Setting	Leadership	Epi	Total
Local and State Public Health	1,560	540	2,100
Healthcare Delivery and Academia	2,240	2,240	4,480
Rounded totals	3,800	2,800	6,600

This report projects selected needs for PHPs. Not included are needs for PHPs for federal/civilian, military, industrial, voluntary organizations, faculty for clinically-oriented Preventive Medicine training programs, and others. Nonetheless, given the paucity of information readily available – these estimates should be of value to the IOM committee in their deliberations. The largest needs not included in these projections are those for federal/civilian and military agencies. This simplified tabulation will be used for most of the projections in the remainder of this paper.

Current Coverage of Leadership and Epi PHP Jobs

What follows is guesswork, even less based on objective data than the projected needs presented above. We provide the best data we have, then, on a judgment basis, make the best projections we can. In most cases; in most agencies – these jobs already exist and are filled – but by physicians without specialty training in public health beyond an MPH degree, or by non-physicians.

Nationwide there are currently about 3,600 living GPM/PH physicians and about 2,700 EIS alumni (a number of whom are also GPM/PH). While these totals seem adequate to meet the needs projected in this report, these numbers do not consider the numbers that are deceased, retired or otherwise fully committed to PHP roles in federal agencies or non-PHP roles.

Data published in the April 2004 EIS Directory show 56 EIS alumni currently employed in local health department settings and 224 in state public health agencies, of the 2,532 for whom data on current employment is known, and an estimated 1,950 of which are physicians. The data available in the April 2004 Alumni Directory shows almost all of the remaining EIS alumni employed by CDC, another federal agency, or in an international or business/industry setting.

Table 7: Data From the April 2004 EIS Alumni Directory

Employment Setting	EIS Alumni	Est EIS Physicians (77% of EIS Alumni)
Local Public Health	56	43
State Public Health	224	172
Healthcare Delivery (civilian, non-academic, non-special population)	365	281
FQHCs and similar community-oriented healthcare programs		
Medical Schools	331	255
Schools of Public Health		
GPM/PH public-health oriented residency-training programs		
Totals	976	751
Rounded totals		

To complete our estimates of unmet need, we will presume that of the jobs noted above, 80% are Epi, and 20% Leadership. It would appear that no more than 50 currently represent a pool (from healthcare delivery or otherwise lost to follow-up) that might be available for recruitment into PHP positions, should attractive job opportunities arise.

Table 8: We have no current employment data for GPM/PH physicians. Of the ACPM estimated 3,600 living GPM/PH physicians, our working guesstimates are as follows:

1. Retired, or otherwise not professionally active – 20% = 720
2. Military or civilian federal agency – 10% = 360
3. Healthcare delivery with no PHP role – 30% = 1,080
4. Healthcare delivery with PHP role --- 20% = 720
5. Academia– 15% = 540
6. State/local public health
(evenly divided between state and local agencies)– 5% = 180
7. Other PHP role – (some, but very few)
8. Presumed 80% Leadership, 20% Epi
9. Of all those noted above, we would guess that perhaps as many as 200 (from retired or otherwise not professionally active + healthcare delivery with no PHP role might represent a pool of individuals available for recruitment, should attractive job opportunities arise.

After generating the estimates presented above for current employment of EIS alumni and GPM/PH physicians, the following table was generated from within an Excel Spreadsheet:

Table 9: Summary of Job Slots Filled by Fully Qualified PHPs

Employment Setting	Leadership			Epi			Total		
	Job Slots	Filled		Job Slots	Filled		Job Slots	Filled	
		#	%		#	%		#	%
Local Public Health	1320	81	6.1%	360	52	14.6%	1680	133	7.9%
State Public Health	240	106	44.3%	180	156	86.4%	420	262	62.4%
Healthcare	1600	632	39.5%	1600	369	23.1%	3200	1001	31.3%
Academia	640	483	75.5%	640	312	48.8%	1280	795	62.1%
Rounded Totals	3800	1302	34.3%	2800	889	32.0%	6600	2191	33.3%

Table 9 shows the number and percentage of jobs in each of the major employment settings covered in this report that are filled by fully qualified PHPs. The “unfilled” positions are either non-existent, vacant, or filled by individuals with lesser qualifications (from an AAPHP perspective). Of the 6,600 total positions, only a third are filled by fully qualified PHPs. Deficiencies are greatest in Local Public Health, where less than 10% of both Leadership and Epi job slots are filled with fully qualified PHPs. Deficiencies are least in State Public Health Epidemiology jobs, where an estimated 86.4% are filled with fully qualified PHPs. This favorable statistic is unquestionably due to the attention the EIS has paid to these positions over the past half century. About one third of Healthcare positions are properly filled, as are about 2/3 of the positions in Academia.

Overall, there is a deficit of about 4,400 PHPs in these employment settings. These additional PHPs will have to come from a combination of attracting fully qualified PHPs from other occupational settings (mainly conventional medical practice) and from expansion of PHP training programs.

Statistical Estimations of Need, Capacity and Costs of Expansion

Output of Current PHP Training Programs

ACPM estimates that there were 183 physician residents in practicum programs this last academic year. ACPM also estimates that, as of 2004, there were about 3,600 living GPM/PH physicians in the United States – including retirees and those not currently working in this field. Data from the CDC web site shows about 35 American physicians in each current EIS class – bringing the total number of public health physicians trained per year to 218.

Some more educated guesswork:

1. Of the current 183 public health physician trainees being generated each year in the US –we will presume about 80% could be attracted to health department, healthcare, and academic PHP jobs. Of these 146 program graduates each year, we will presume that their distribution will likely reflect the 20%/80% split between currently filled State/Local and Healthcare+Academic PHP positions. Thus, these residency programs are graduating about 30 PHPs to state/local public health jobs each year and about 120 PHP jobs to healthcare and academic settings.
2. Of the current 35 American physicians in each EIS class, about 10 could be attracted to state and local public health PHP jobs, and 10 to healthcare and academic settings, with the remainder pursuing federal agency positions or other career options.
3. This brings our total annual output of new PHPs for employment settings covered in this report to about 170, with **40 going to state and local public health** and **130 going to healthcare and academic settings**.

Annual Need for New PHPs for these selected employment settings

1. Since it would be difficult and overly expensive to attempt to build a PHP training system large enough to rapidly (3 to 5 years) close the gap in unmet need, then have to scale those programs back to a smaller size – AAPHP is proposing that we scale our training capacity to 10% of total PHP job slots.
2. 10% of these would equal 210 for State/Local public health and 450 for Healthcare and Academia.
3. This 10% is based on the projected turnover of an average of 10% of these jobs annually. Using this figure, we could fill the unmet need in an orderly way over the first ten years of expanded programming, then maintain that level of productivity on a continuing basis. This figure is based on an average tenure of 10 years in a PHP job. The average tenure of a state health director is about 2 years (per ASTHO), a local health director about 6 years (per NACCHO). Many state and local PHPs enjoy 20+ year tenures in lower level jobs within their home agencies. Per the 9/13/06 APHA Issue Brief on the Public Health Workforce, the average turnover rate at the state level is 14% (tenure about 7 years). This 10% should serve us well for many years.

Numbers of Additional PHP Graduates needed each year for these selected employment settings

1. State/Local Public Health

- a. 210 (need)- 40 (current capacity) = **170 (unmet need)**.
- b. If we presume that 20% of the graduates of these public-health-centered programs will seek jobs outside state and local health departments, and that 20% of the remainder will secure jobs in the sponsoring agency – at a staffing level higher than that projected in this report, then the **number to be trained** to meet the needs of the rest of the state/local public health system = $170/0.8/0.8= 266$
- c. **Subtotal training capacity for state/local public health** would therefore be $266+40/0.8/0.8 = 328$; more than five times the training capacity of the current system.

2. Healthcare and Academia (same calculations as above); $450-130=320$; $320/0.8/0.8= 500$

- a. **Subtotal for Healthcare and Academia** would be $500+130/0.8/0.8=703$, about 3.5 times the training capacity of the current system

3. Entire PHP Training system – the expanded output of 766 PHPs per year for the job slots in the employment settings included in this year would result in a total training system capacity of $(328+703) = 1,031$ graduates per year. This, in turn, will be almost five times current system capacity.

Projected Costs per PHP Trainee in a GPM/PH Training Program

1. The GPM/PH residency is a three-year program, with a clinical year, an academic/MPH year and a Practicum Year. We will project costs on the basis of the MPH and Practicum years only, presuming that the costs for the clinical year can be somehow secured mostly from healthcare sources (please note that some residency directors disagree with this presumption). With an annual salary in the range of \$40,000 to \$50,000 for the residents, we are projecting program costs at \$200,000 for the two years, inclusive of all overhead, faculty costs, etc.
2. Overall costs for a two-year EIS assignment, with all overhead and most supervisory costs included are about \$290,000 for the two years, and do not include much of the didactic material covered in the MPH and GPM/PH practicum years. Given the higher costs and limitations of the EIS program, we will base our projected expansion entirely on the basis of expanded GPM/PH residency training programs – until and if CDC decides to expand the capacity of the EIS program.
3. Many of these training slots are likely to be filled by mid-career physicians, without the need for an additional clinical year of training. Some of these mid-career physicians will also come to the program already having an MPH degree acceptable to the residency program – thus limiting their training need to the single practicum year.
4. The same costs are projected for state/local public health, healthcare and academia, Leadership and Epi.
5. At this stage of our development, we are projecting that all costs would be picked up from federal sources, with no state or local contributions.

Additional Considerations:

1. We project a reserve pool of no more than 50 EIS alumni and no more than 200 GPM/PH physicians likely to be available for recruitment into the currently “unfilled” jobs, we will project that very few (statistical estimate zero) will be filled from this pool.
2. Given that there are only 35 American Physicians in each EIS class, and the fact that CSTE has determined that filling senior level Epidemiology positions in governmental agencies requires substantial skill in skill domains not covered by current EIS training, we will project that almost all of the current unmet need for Epi PHPs will be filled through expansion of health-department-centered GPM/PH residency programs.
3. Given the dramatic narrowing of the differences in qualifications for Leadership and Epi jobs created by the new CSTE Applied Epidemiology Competencies for Governmental Public Health Agencies – health-department-centered GPM/PH residency programs will gear themselves to train their residents to fill both types of positions – thus eliminating the need for separate public health practice oriented Leadership and Epi training programs (research-oriented epidemiology programs will remain separate).

Projected Annual National Costs for Expansion of GPM/PH Training Programming:

GPM/PH residency is a three year program. While we will see a few additional graduates in Years 1 and 2, it would take three years to graduate the first fully expanded class. At maximal proposed expansion, It would then take another ten years to fully saturate our current unmet need. Another limiting factor is the speed with which such programs can expand, while maintaining the highest possible standards of quality for applicants, faculty and the capacity of their host agencies to provide adequate work/study material for the trainees. Pending receipt of additional data from the current residency programs, we are presuming that they could triple their current training capacity, if given the dollar resources; but further expansion would require creation of new residency training programs.

The costs below represent only the cost of the expanded capacity, and do not include their current costs or current training capabilities.

Annual costs of full scale expansion, beginning Year 3 of the expansion process are projected as follows:

State/local-health-department-centered programs: Trainees per class: 266; Total national cost: \$53,2m

Healthcare and Academia: Trainees per class: 500; Total national cost = \$100m

Total: \$153,200,000 per year.

Anticipated Sources of Funding

State or local government will not probably be able to cover any significant portion of this cost – especially since we are already asking them to hire more expensive staff for their lead public health agency positions.

Our consideration of this need for funding comes at exactly the same time that the Council on Graduate Medical Education (COGME) has declared that the future funding for all residency training for physicians in is crisis and in need of major reconsideration and reconfiguration. Almost all of their funding is from Medicare.

Traditionally, federal support for GPM/PH residency programming has come from would be the Bureau of Health Professions at HRSA. The proposed Phase 1 request for of \$27 to \$30 million would be large, but not overwhelming for them. The problem with HRSA is the instability of their funding stream – which all funding for such education being zeroed out each year, then partially reinstated by congressional action.

Given this situation, the following are suggested as the most promising sources of funding for the expansion of GPM/PH training programs:

1. Work with and through COGME to have GPM/PH residency training at least partially funded through **CMS/Medicare** on the basis of the value of Leadership management, and Epi/quality assurance skills to our healthcare delivery systems. As COGME explores **Medicaid and private sector healthcare system sources of residency funding**, GPM/PH should be included.
2. **Department of Homeland Security** should be explored on the premise that both the management and epidemiologic skills needed for optimal levels of preparedness for bioterrorism and other emergency/disaster related situations. A good case could be made for DHS covering 50% of the cost of the management/policy training and 70% of the epidemiology training.
3. **Centers for Disease Control** has two roles to play with regard to training of public health physicians. The first is the need to expand the Epidemic Intelligence Service – both for the services the EIS directly provides, and for the value of the EIS in training medical epidemiologists needed for the rest of our public health infrastructure. The second role relates to CDC's role in overseeing the state/local public health system. Given this oversight and research role – it is reasonable and proper to explore the possibility of CDC picking up a significant percentage of the dollars needed for Leadership training, especially within teaching health departments. CDC already sponsors its own GPM/PH residency program to meet CDC needs for Leadership PHPs.
4. **HRSA Bureau of Health Professions** has been the traditional source of funding for Leadership PHP training programs. The problem here has been one of lack of stability, and administrative action to zero out all such funding every year. Each year this has been followed by a compromise in which the funding is reinstated, but at a reduced level. Here the challenge for the public health community is one of opening channels of communication to administrative decision makers in OMB and elsewhere, above HRSA, to see if we can convince them of the importance of expanding funding for PHP and other health professional training.

Other Steps Required

1. **Outreach within the “house of medicine:”** AAPHP and ACPM should work with and through AMA, ABPM, RRC, COGME and state boards of medical examiners to secure full recognition of Public Health as a medical specialty, with recognition of public health policy, management and analysis as the definitive practice of medicine for this medical specialty.
2. **Enhancement and standardization of leadership/policy/management** curricula in GPM/PH residency training programs.
3. **Outreach external to the “house of medicine:”** Initiate the outreach to state and local elected and appointed officials and others as needed to educate them as to the potential value of GPM/PH physicians at local, state and national levels, in both public and private settings. The most important message to be communicated here is that there is a level of public health training for physicians beyond the MPH, and the critical importance of that practicum training in terms of real-life skill in addressing community needs for public health services, protections and policy guidance.
4. **The substance and image of highest possible quality:** Engage in an outreach program to encourage state and large local health departments to seek recognition as “Teaching Health Department” – for purposes of presenting themselves as offering the highest quality public health services, protections and guidance to their respective constituencies.
5. **Tracking progress and guiding outreach programs:** AAPHP, with support from ACPM and other related organizations should track advertisements for jobs best filled by PHPs for the purpose of tracking trends in job qualifications and to enable outreach to individual employers to educate them to the unique skills of fully qualified PHPs.
6. **Research agenda:** Research should be conducted relative to the value of PHP qualifications for public health leaders in state and local health departments, the healthcare delivery system and academia.
 - This should be of sufficient detail to identify specific topics that should be added to current training curricula and continuing education programming.
 - This research agenda should encompass all categories of health professionals (doctor, nurse, health educator, etc) engaged in public health, preventive and quality assurance programming with policy and management responsibilities.
 - This research agenda should specifically address the business case for both the training programs and personnel qualification changes recommended in this report.
 - This research agenda should also include the survey work needed to refine the estimates and projections in this paper.

AAPHP Recommendations

Phase 1:

Immediately proceed to request and advocate for \$30,000,000 in federal and private foundation funding to immediately fund 50% of the proposed expansion for the state/local health department PHP training programs, with \$27million to be used for the expansion of the training programs and the remaining \$3million to be used for the outreach program to hiring authorities, enhance and standardize leadership/policy/management curricula, the research needed to refine estimates of need, and the costs of separating Public Health from clinical Preventive Medicine as sub-specialties under the American Board of Preventive Medicine.

Phase 2:

Based on the results of the Phase 1 studies, tweak estimates of need, capacity, etc and consider preparing the applications needed to pursue full expansion of both the public-health-based and clinical training programs.

Acknowledgments

Joel L. Nitzkin, as primary author and editor of this paper on behalf of the American Association of Public Health Physicians (AAPHP) is indebted to the Officers and Board of AAPHP, Clyde Schechter, Neal Kohatsu, Denise Koo, Daniel Blumenthal, Miriam Alexander, Mary Applegate, Gail Stennies, Paul Bonta, Mike Barry, and others who contributed wisdom, comments and unpublished data and reports to help make this paper possible.