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Credentialing of the Public Health Work Force

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Abstract

Pennsylvania ranks last nationally among all states in the size of its public health workforce per capita. More than a doubling of the current workforce would be needed for Pennsylvania to achieve even the national average. For the foreseeable future Pennsylvania will depend even more heavily than other states on having a highly skilled public health workforce to overcome our shortages in numbers. In this paper, I will discuss the efforts to at long last develop a core credential for the public health workforce and the potential impact this will have on ensuring a highly competent public health work force capable of responding to the public health challenges facing our state and our nation. I will also consider the relationship between public health and medicine including comparing the approaches toward credentialing.

Public health is virtually the only professional field without a credential. After many years of committees, task forces, and a recommendation from the Surgeon General, the National Board of Public Health Examiners (NBPHE) was incorporated in December 2005. Its volunteer board has seats allocated to a broad range of participating public health organizations. The first credentialing examination in August 2008, will test for knowledge of core and cross-cutting educational competencies that are relevant to the practice of public health. The driving forces leading to credentialing in public health include: 1) heightened recognition of the importance of the public health work force; 2) an increase in both the absolute number and percent of public health graduates who have no other credential; 3) increase in the availability of public health graduate education throughout the country; 4) societal demand for credentialing and for professional accountability; and 5) improved delineation of the core and cross-cutting educational competencies underlying public health practice.

Introduction

Examination of the potential effectiveness of public policy requires consideration of the workforce that designs and carries out that policy. A notable aspect of the public health workforce that distinguishes it from virtually all other health or other professional fields is its lack of a formal credential in the general field of public health. I briefly describe the history and rationale for the new and long-awaited development of a national public health credential, as well as its potential impact on Pennsylvania.

The first core credentialing examination in the field of public health is being offered in August 2008, by the National Board of Public Health Examiners (NBPHE). Successful examinees among the close to 900 registrants for this new credential will receive the Certificate in Public Health (CPH), attesting to their competency in the core disciplines in public health (Gebbie et al. 2007; Goldstein 2008; National Board of Public Health Examiners 2008). Of the applicants, 6% are from Pennsylvania – only New York and California have a larger contingent among the examinees. Among the examinees, the largest employer group is government public health agencies.

The new core public health credential has developed after literally decades of discussion and debate. Following a call by the U.S. Surgeon General in the late 1980s, both the American Public Health Association (APHA) and the Association of Schools of Public Health (ASPH) developed working groups to explore credentialing (Akhter 2001; Sommer 2000; Association of Schools of Public Health 2000). Similarly, the U.S. Centers for Disease Control identified credentialing as among the pathways to strengthen the public health workforce (Governmental Public Health Implementation Team 2004). A key figure throughout the more recent discussions has been Dr. Charles Mahan. Dr. Mahan, the original President of NBPHE, has a broad background as former Commissioner of Health of the State of Florida; former President of the American State and Territorial Health Officials (ASTHO); and former Dean of the University of South Florida School of Public Health (Mahan and Malecki 2004; Gebbie et al. 2007). His ability to bridge the gap between academia and public health practice has been crucial in moving the NBPHE forward, particularly as there has been tension between the public health practice and academic communities.

Public Health is not unusual in having tensions between practitioners and educators. The perception that academics are primarily interested in furthering research rather than responding to practical problems in the field extends to every academic program leading to practice (see, for example, a recent article in *Solicitor's Journal* about the need for law school to be relevant to legal practice: Roberts 2008). A 1988 Institute of Medicine report on "The Future of Public Health" specifically enjoined schools of public health to be more responsive to the needs of public health practitioners (Institute of Medicine 1988). The result has been reluctance among the public health practitioner organizations to allow academia to take the lead in the credentialing of public health practice. This tension was resolved with the decision to move forward in developing a credential reflecting competency in the core and cross-cutting disciplines that are the basis for the practice of public health, but not in the practice competencies themselves. The five key public health academic and practice organizations all participate in the NBPHE, including nomination of board members. These are: the American Public Health Association (APHA); the Association of Prevention Teaching and Research (APTR); the Association of Schools of Public Health (ASPH); the Association of State and Territorial Health Officials (ASTHO); and the National Association of County and City Health Officials (NACCHO). Eight additional board members have been selected by the NBPHE to ensure diversity of representation, including other major public health organizations. Seven of the current 20 members are now or recently have been members of state or local government public health departments, including six who have headed such departments. The two board members from Pennsylvania are Dr. Walter Tsou, former Health Commissioner of Philadelphia and former President of the American Public Health Association, and myself. The first NBPHE meeting was held in December 2005. The National Board of Medical Examiners (NBME), based in Philadelphia, is assisting in preparation of the examination. The goal of the NBPHE is:

> To ensure that students and graduates from schools and programs of public health accredited by the Council on Education for Public Health (CEPH) have mastered the knowledge and skills relevant to contemporary public health practice (National Board of Public Health Examiners 2008).

The sole focus of the NBPHE is on the core and cross-cutting educational competencies central to public health. The historic compromise that resulted in the NBPHE means that for at least the near future it will remain narrowly focused.

An exceptionally important impact of the NBPHE will be the enhancement of continuing education (CE) in public health spurred by the examination and by recertification (Allegrante 2001). We anticipate that recertification will occur every ten years through both continuing education and re-examination. Among the CE efforts related to the examination is a study guide prepared by the ASPH (Association of Schools of Public Health 2008). Other organizations involved with the NBPHE, as well as HRSA-sponsored Public Health Training Centers, are also planning programs to help study for the examination.

An important challenge faced by the NBPHE in accomplishing its goals is the issue of credentialing the current federal, state, and local health agency work force, many of whom are not eligible for the CPH by virtue of their not having received a graduate degree from a CEPH-accredited school or program. Almost all of these individuals have a bachelor's degree and have learned on the job. With the current broad availability of graduate education in public health, there seems to be no rationale that advanced public health education should not be a goal of anyone committed to a career in this complex and demanding field. Some state and local public health department employees are specialists, sometimes with their own graduate degree, e.g., an expert on informatics or a hydrogeologist. Such expertise is highly valuable and should be rewarded – but such specialists should not expect to be advanced to management positions without a broader grounding in public health achievable through graduate education to the master's level.

The Role of Workforce Credentialing In the Health Professions

Health specialties, including public health, have at least some aspects of a guild – there is a body of specialized knowledge which must be mastered to function effectively. However, as with other modern professions such as law and engineering, entrance into health guilds is no longer through an apprentice system in which the first criterion is family kinship. Instead, entrance occurs through the progressive demonstration of mastery of core elements of the profession. This mastery is

demonstrated not only by graduation from an educational institution accredited to provide the core elements, but also by passing an examination testing mastery of the core elements. On-the-job education continues after credentialing in virtually all fields and is an important part of the professional development of the practitioner – there are few of us who would preferentially want our medical, dental, or legal case handled by someone who has just been licensed to practice medicine or dentistry, or has just passed the bar examination.

The rapid pace of developments in virtually all modern professional disciplines has usually led to the requirement for re-credentialing based upon demonstration of continued mastery of core elements and the integration of newer information and competencies. My board certification in internal medicine (1969) and hematology (1971), both based upon required training in accredited programs and upon the passage of examinations, were received at times when no recertification was contemplated. Since 1990, new recipients of either of these credentials must be recertified every ten years. I am more recently credentialed (1979) by the American Board of Toxicology which now requires recertification every five years – a process which helps me keep current with the field and comfortable in my credential.

Certain subspecialties related to public health do have credentialing examinations. Among these are health educators, environmental sanitarians, and industrial hygienists. For each of these specialties there are educational tracks that proceed through schools of public health. But alternative educational pathways are possible to achieve candidacy. One example is the Certified Health Education Specialist (CHES) which is administered by the National Commission for Health Education Certification, Inc, headquartered in Allentown, Pennsylvania. The NCHEC granted its first credential for certified health education specialist (CHES) in 1989. As of 2005, there were more than 12,000 CHES holders nationwide (Airhihenbuwa et al. 2005). Of note has been the gradual transition from a highly controversial activity within the health education profession, to the current situation in which the majority of advertisements for health education jobs state that CHES is preferred or required. The NCHEC statement of the benefits of certification applies very well to the NBPHE (see Table 1, page 142).

Table 1: Benefits of Certification

(adapted from: National Commission for Health Education Certification, 2002)

Voluntary professional certification programs establish a national standard. They differ from state and local certifications and registries in that the requirements do not vary from one locale to another. National certification benefits practitioners and the public in that it:

- Establishes a national standard
- Attests to the individual's knowledge and skills
- Assists employers in identifying qualified applicants
- Provides a sense of pride and accomplishment
- Promotes continued professional development
- Enhances the ability of the profession to accomplish its public mission

Receiving a credential has also been a pathway to achieving greater rewards for job performance. For example, the relatively new national teacher's credential is now recognized by all states. Many states and school districts provide additional benefits to teachers holding this credential, including higher salaries and an enhanced ability to move to a new school district without losing seniority (All Star Directories 2002). Governmental agencies are also far more likely to provide support for continuing education or travel to a national meeting for those employees who are keeping up a job-related credential.

Why Now?

An obvious question is, after all of these years of discussion, why is it now time to develop a core public health credential? I suggest there are at least five reasons:

1) Change in the Educational Background of Public Health Graduates

The background of those receiving public health degrees has changed dramatically. At one time, schools of public health restricted admission to those who already had an advanced degree in medicine or another health field. This was liberalized over time to a matriculation requirement that specified either an advanced health degree or a minimum number of years in practice. Currently, any such requirements have virtually disappeared. While no national statistics have been kept, there can be no question that the overwhelming majority of those completing graduate education in accredited schools and programs of public health now have no other certifiable credential beyond that of their MPH degree. For example, only 20% of the University of Pittsburgh Graduate School of Public Health's most recent matriculates had another degree, while in 1992 it was 50%.

These graduates are younger and presumably will have more time in their careers than those who entered after first receiving a medical or other health degree. Until now, they have been virtually alone among the graduates of academic health programs in not having a credential attesting to their mastery of the core competencies relevant to the practice of their health discipline.

2) Increase in the Opportunity to Obtain Graduate Education in Public Health

The increase in number of accredited schools and programs in public health in recent years has been phenomenal, outstripping that of virtually any other major academic health science field. During the past decade there has been a one-third increase in the number of accredited schools of public health to the current 42 and more than a doubling of accredited programs in public health to the current 69. Further increase in programs and schools is anticipated along with a continued increase in enrollment. For example, student enrollment in the University of Pittsburgh GSPH has increased from 400 to over 700 in the past decade. As a comparison, during this period there has been relatively little change in the number of new matriculates in American medical schools, and until the past three years, a significant decline in applicants.

3) Increasing Awareness and Complexities of Public Health Challenges

Public health is in the midst of a transition. There is growing recognition of the need to improve the public health infrastructure, including development of a highly competent public health workforce (Gebbie and Turnock 2006; Gebbie et al. 2002; Baker et al. 2005). In the past it has largely been an unseen discipline, responsible primarily for preventing adverse health events through actions often grouped under the heading of sanitary engineering. Winslow, a leader in early 20th Century public health and the founder of the Yale School of Public Health, was fond of pointing out that a grateful patient cured of a disease is a commonality in medicine, but it would be unusual to express gratitude to the public health expert for your wellness. However, today there are many public health issues that again have caught the public's attention. These include emerging infectious diseases such as SARS and avian flu, the threats posed by bioterrorism, the obesity epidemic, the health of aging "baby boomers," the prevention of chronic diseases, and the health impacts of global climate change. For each of these, the public is aware of the need for an expert workforce to address the potential for major societal impacts that extend far beyond individual health effects.

There are other increasingly recognized societal issues that can be readily approached through the wide lens of public health. Among them are health disparities between our majority and minority populations; the growing number of uninsured; the health and societal impacts of urban sprawl; and the broad spectrum of global health and sustainability issues. Equity is at the heart of many of these issues, some of which, such as environmental justice, are framed in language that specifically recognizes that societal inequality is a root cause. All are issues that extend across usual disciplinary boundaries and that require a systems approach. Cross-disciplinary systems approaches characterize public health, in contrast to the reductionism that is at the core of subspecialty medicine.

4) Emergence of a Public Health Core Curriculum

The NBPHE examination will rely on the core and cross-cutting competency processes developed by the ASPH, the Council of Linkages, and others (Association of Schools of Public Health 2005; Calhoun et al.

2008; Council on Linkages between Academia and Public Health Practice 2005; Moser 2008). The agreement among the major public health organizations that led to the creation of the NBPHE is built upon an agreement that there are core educational credentials that underlay the practice of public health. This recognition has developed through multiple complementary approaches by the various academic and practice organizations in the field. The Council on Education in Public Health (CEPH), the accrediting body in the field, requires that there be full courses in five core public health areas. These are epidemiology, biostatistics, environmental health, behavioral and community health sciences, and health policy and management. Determining what constitutes a core course suitable for accreditation has led to much discussion among academic and practice organizations. The CEPH board is itself made up of representatives from APHA and ASPH as well as others chosen to represent specific interests (Council on Education for Public Health 2008). Determining core competencies upon which core coursework should be based is a common issue in accreditation of educational institutions. In 2001, the ASPH embarked on a major effort to develop core competencies in the five core disciplines. Core curricular activities have increasingly represented collaboration between academia and public health practice. Particularly notable has been the core competency activities of the Council of Linkages, a coalition of representatives from 17 public health organizations that work to further academic/practice collaboration, particularly in workforce training and competency activities (Council on Linkages Between Academia and Public Health Practice 2005). The NBPHE test writers took into account all of these core curriculum activities pertinent to their area of test development. In addition, the examination will test for a variety of cross-cutting competencies that were added following the recommendations of an Institute of Medicine committee (Institute of Medicine 2003). These cross-cutting competencies are: communications and informatics, diversity and culture, leadership, public health biology, professionalism, program planning, and systems thinking.

One impact of the NBPHE will be to provoke continued discussion and improvement of these educational competencies. Inevitably, those who believe that their area of emphasis has been inadequately covered in the examination will work to change the core curriculum and the core competencies on which the examination is based. As is clear from the

experience of physician educators, building a competency-based curriculum can be challenging but is worth the effort (Albanese et al. 2008).

5) Increased Societal Emphasis on Professional Accountability, Including Institutionalization of Rewards Based Upon Credentials

Professional accountability is a central aspect of modern society. Work forces with almost any pretensions to a basic core of knowledge or a responsibility to the public have developed credentials that are based on the demonstration and maintenance of this knowledge and of a skill set. This pervasive societal demand for credentialing and for professional accountability inevitably has implications to the public health workforce, which has been virtually the only major health field without a central credentialing activity.

The National Organization for Competency Assurance (NOCA) is a national membership group of credentialing organizations that was formed in 1977. It has rapidly grown. Its web site in June 2008 lists 90 credentialing organizations offering 212 credential programs (National Organization for Competency Assurance 2007), mostly for workers in health professions. There are even more health credentials – for example, the American Board of Medical specialties, which consists of 24 medical/specialty certifying boards, is not a NOCA member.

The importance of assurance and accountability in public health is also reinforced by a separate national movement under way to develop standards for accrediting of public health departments (Public Health Accreditation Board 2007). Sixteen states, not including Pennsylvania, have been funded to explore the accreditation process with a goal of developing criteria that will begin to be applied in 2011. As Pennsylvania has relatively few local health departments, the accreditation activity is of somewhat lesser importance to our Commonwealth than to other states. The two activities of credentialing and accreditation are complementary – issues related to the quality of the workforce, which are central to credentialing, are also important to the criteria for accreditation of local health departments.

The Relationship Between Medicine and Public Health

Any consideration of the role of the public health workforce must take into account the fact that our country is far more oriented toward treatment than prevention of disease. Various cost figures are used to attempt to describe the relative amounts spent on prevention versus treatment of disease, with treatment accounting for more than 90% in virtually all estimates. These estimates are complicated by the various definitions of prevention. An egregious example is that of a director of a National Institute of Health who defined heart transplantation as a preventive measure because it prevented heart failure (Rall 1994). However, there is clarity and agreement that we are not achieving societal health goals. Despite the highest per capita spending rate on health among all countries, we do not rank close to the best in usual metrics of health such as longevity, where we rank 47th (United States Central Intelligence Agency 2008b), and infant mortality, where we rank 43rd (United States Central Intelligence Agency 2008a). The amount of uninsured is over 40 million and continues to climb; and despite improvements in some areas, major health disparities remain between the disadvantaged and advantaged in our nation (Agency for Healthcare Research and Quality 2006).

In considering the relationship between medicine and public health in achieving national health goals, it is important to note that there is some degree of overlap among all of the health professions. From a policy perspective, a key issue is to enable the overlap to function effectively in accomplishing beneficial societal goals while minimizing the negative aspects of redundancy and organizational conflict. At one extreme, medicine can be described as reactively responding to an individual who has already developed a specific disease, and public health as proactively providing for the wellness of populations. The standard World Health Organization definition that guides public health is: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (World Health Organization 2008).

Note that in the discussion above I have used the term “medicine” very broadly to include all of the components of health care, including nursing, pharmacy, dentistry, etc. Below I will define medicine more narrowly as those aspects of health care performed or directed by

physicians. I do so in order to consider the issue of credentialing by contrasting the requirements for physicians, and their role in society, with those of public health practitioners.

The overlap between public health and medicine in achieving health occurs in many ways, ranging from the medical subspecialty of preventive medicine to the bedside actions of physicians who act to treat or inform patients in ways to prevent further problems. A useful classification of preventive activities considers primary prevention as an approach that totally avoids a risk of adverse health consequences (e.g., prevention of smoking); secondary prevention as early detection and intervention to prevent disease (e.g., the detection and treatment of asymptomatic high blood pressure); and tertiary prevention as preventing complications of the disease or its treatment. Both medicine and public health are involved in all three types of prevention, with medicine focusing more on detection and treatment, and public health on primary prevention through policy as well as detection. An obvious overlap is in the example given for secondary prevention: detection of high blood pressure can occur in the physician's office during a routine visit, or during outreach to populations in the community organized by medical groups, such as hospitals, or by public health authorities working alone or with community-based organizations. Similarly, primary prevention of smoking can occur through a physician's advice to a pre-teen, or through a broad panoply of public policy initiatives, legal activities, and outreach. The Commonwealth's Department of Health maintains an active program in alerting the public about the benefits of screening for high blood pressure as well as many other preventable diseases. The Department of Health has been particularly active in tobacco prevention and cessation, working with programs in each county. Most of our state's tobacco funding, however, goes to the medical research community in part because of erroneous testimony by the head of a major Pennsylvania cancer institute that cigarette smoking was not preventable (Snowbeck 2000).

Public health credentialing can also be considered in relation to physician credentialing. The latter occurs in a stepwise fashion that begins with passage of three different examinations, known as the U.S. Medical Licensure Examinations, which are virtually required by every state before licensure. The first examination tests for knowledge of the basic science of medicine and is usually administered after the second

year of medical school. The Step 2 examination tests for knowledge expected to be obtained in the core clinical disciplines and is usually taken in the fourth year of medical school prior to graduation. The required Step 3 examination is aimed at examining for skills necessary for clinical encounters. While there is some variation among states, virtually all require passage of Steps 1, 2, and 3 or their equivalent (there are alternate examination pathways developed by osteopathic physicians and for foreign medical graduates). The new credentialing process in public health is comparable in some ways to Step 1 of the USMLE in that it tests for core knowledge on which public health practice is based. But, as it is not required for licensure, the NBPHE credential is in other ways similar to voluntary board examinations in medical specialties. These provide evidence of knowledge in the field and facilitate recognition that can lead to further practice opportunities – but are not required for licensure to practice. As with the NBPHE, eligibility to sit for specialty medical board examinations usually requires some element of accredited training, e.g., eligibility for the American Board of Family Medicine certification examination includes an MD or DO degree from an accredited institution and at least three years of training in a family medicine residency program accredited by the Accreditation Council for Graduate Medical Education.

Organized medicine is not unified in its consideration of public health. There is both a reaching out to schools of public health and an aggressive assertion that public health is a medical specialty. The NBME credentialing process has led to further exploration of the roles of medicine and public health in this country. The American Medical Association (AMA) reacted negatively to the credentialing of public health professionals. At the AMA's 2007 Annual Meeting, a resolution was passed that specifically names the NBPHE. The basic premise of the resolution is that public health is a specialty of medicine and that certifying public health practitioners would mislead the public into believing they are physicians (American Medical Association 2007). Ironically, this resolution was passed within a few weeks of an Institute of Medicine report decrying the lack of physician involvement in public health (Institute of Medicine 2007; Goldstein 2008).

Physicians do play an important role in public health, and those board certified by the American Board of Preventive Medicine have been particularly valuable (Institute of Medicine 2007; Goldstein 2008). But,

as discussed below, there are far too few whose training makes them eligible for board certification in Prevention and Public Health to respond to our nation's public health infrastructure needs.

The role of public health in physician education has recently begun to be explored in a standard questionnaire given to medical school graduates (Division of Medical Education 2007). The only specific question about "public health" in this questionnaire is subsumed under the heading of "Evidence Based Medicine." Of the responding students, 32.1% stated that the instruction was inadequate. The only other question in the category of "evidence based medicine" receiving such a high level of inadequate as a response was the related category of "role of community health and social service agencies." In essence, a third of medical school graduates felt that their training in public health or in community related activities was inadequate.

Further training of future physicians in public health is highly desirable, and there are efforts under way to accomplish this goal (Institute of Medicine 2007; Maeshiro 2008; Hernandez and Munthali 2007). But the major determinant of the medical field chosen by a future physician is their residency program. Unfortunately, residency programs in preventive medicine and public health represent a tiny fraction of total approved residencies. There are only about 130 approved preventive medicine residency positions, out of over 20,000 new residency slots each year nationally. Even with this small number, many of the preventive medicine residency positions do not fill. In comparison, there are over 5,000 MPH graduates each year.

Public health leaders have often considered medical education to be part of the problem. Roemer (1986) has stated: "After one has seen the failures to provide public health leadership in country after country, Province after Province, one begins to regard training in clinical medicine, training to be a clinical physician, as more of an obstacle than a preparation for the role of public health leader." To be effective in preparing for roles in public health, physicians need to transcend their medical education, not just supplement it.

Medical and Public Health Education in Pennsylvania

Pennsylvania is active in public health education. The Drexel University School of Public Health was founded as the Allegheny University School of Public Health in 1996. The School's founding dean, Dr. Jonathan Mann, was a charismatic leader in public health who developed the World Health Organization's Global AIDS program. His vision of the interrelationship between human rights and human health was central to his development of a then unique model of public health education, in essence a "school without walls" in which the students learned in a case-based learning format and spent a significant amount of time in the community performing both their research and service hours. Although he died in a plane crash in 1998, Dr. Mann's vision has persisted in the successor Drexel University School of Public Health. Under the leadership of the current dean, Dr. Marla Gold, an infectious disease physician and expert in HIV/AIDS, Drexel in 2007 received full accreditation as a school of public health from CEPH. Students and faculty continue to focus much of their work in the regional communities. The School has thrived with an exponential increase in class size, expert faculty, and in research funding.

The University of Pittsburgh Graduate School of Public Health (GSPH) was founded in 1948, largely in response to the occupational and environmental health issues of western Pennsylvania. The founding dean, Dr. Thomas Parran, who had been Surgeon General under Presidents Roosevelt and Truman, established a focus on research to advance public health. The GSPH remains a public health research powerhouse, ranking third among 42 schools of public health in competitive funding from the National Institutes of Health. Only Johns Hopkins and Harvard Schools of Public Health receive more total NIH funding, but the GSPH exceeds them in funding per faculty member. Its annual NIH funding total also exceeds three of the six Pennsylvania medical schools. In recent years its public health practice components have achieved national recognition, including the Center for Public Health Practice headed by Margaret Potter, JD, and the Center for Minority Health, headed by Stephen Thomas, PhD. The new GSPH Dean, Dr. Donald Burke, has an exceptional record of leadership in global health issues, particularly emerging infections, and is the UPMC-Jonas Salk Chair in Global Health.

Pennsylvania is fortunate to have six allopathic medical schools, slightly above the national average in number (with 4.2% of the population we have 4.9% of the 129 accredited medical schools). We also have two osteopathic medical schools of the 25 in the United States. Two of the allopathic medical schools (University of Pennsylvania and the University of Pittsburgh) are leading research institutions, ranking in the top ten in terms of receiving NIH grants, and propelling Pennsylvania to be fourth highest among all states in terms of NIH funding. We received $1.4 billion in NIH funding 2007, equivalent to 6.8% of the total (National Institutes of Health 2008).

Recently, there has been a movement in academic medicine to obtain support for increasing the number of medical students. At the state level, bills have been introduced to increase funding for medical education in Pennsylvania. Of note is that a driving force in the expressed need for more medical school graduates is the perceived shortage of primary care physicians. The American Association of Medical Colleges has campaigned for federal funding on this basis. This is also a major rationale for the new allopathic medical school proposed for Scranton which has received $35 million in state funding and intends to admit its first class in Fall 2009 (Sonderman 2006; Pennsylvania Medical Society 2008). Not all agree. Goodman and Fisher (2008) argue that the perception that there is a physician shortage is a symptom of the underlying problems in our health care system, and that increasing the number of physicians will not be helpful. Central to this and other arguments about physician numbers has been the concern not only about the relative lack of primary care physicians, but also the declining interest among medical students in general care (Forrest 2006; Garibaldi et al. 2005). The reasons range from the focus of health care resources on specialized physicians, to burnout among primary care practitioners from seeing too many patients in too little time. As primary care physicians are at the forefront of preventive medicine to individuals, and in such settings as Community Health Centers (Rosenblatt et al. 2006; Iglehart 2008), their decline in number, and the increasing demands on their time, make organized medicine even less likely to be the locus of needed preventive activities thus increasing demands on the public health workforce.

The increasing recognition by academic medicine of the value of academic public health is evident in Pennsylvania. Of the six allopathic

medical schools, two are associated with schools of public health on the same campus offering master's and doctoral degrees (Pittsburgh and Drexel), and three of the four other medical schools have accredited programs of public health offering the MPH degree. Of note is that two of these medical school public health degree programs are relatively recent – the programs at both the University of Pennsylvania and at Thomas Jefferson Medical School being accredited in 2006. This represents the recent nationwide surge in public health educational programs at universities with medical schools. Of the 69 degree granting graduate educational programs accredited by the Council on Education for Public Health, 38 have been accredited since 2000. Not all of the programs that are on a campus with a medical school are closely associated with the medical school. Temple University, whose MPH program was accredited in 1985, is at the College of Health Professions. Similarly, New York University's accredited program in public health is on its main campus in a Department of Food, Nutrition and Public Health rather than on the medical campus.

The only Pennsylvania university that has an allopathic medical school but does not offer an accredited graduate degree in public health is The Pennsylvania State University. Although there have been moves in this direction, it is unlikely to occur at the Hershey campus due to the recent appointment of a Senior Vice President for Health Affairs and Dean of the Penn State College of Medicine who has a track record of opposition to public health educational programs.

Pennsylvania is also fortunate to have excellent accredited public health graduate programs that are not associated with universities with medical campuses. East Stroudsburg University and West Chester University both offer fully accredited MPH degree programs. East Stroudsburg University's program also represents the changing trends in public health education. In the past, there was a separate accreditation pathway for graduate programs that focused on health education. CEPH changed their rules to establish the same core public health requirements for all accredited programs. These are the core disciplines on which the NBPHE is based.

Professional Licensing and State Health Leadership in Pennsylvania

Pennsylvania's Department of State has oversight function over 27 professional licensing boards and commissions with the goal of protecting the health, safety, and welfare of Commonwealth citizens. The 15 health-related boards alphabetically range from chiropractic to veterinary medicine and include medicine, dentistry, nursing, pharmacy, physical therapy, etc. – but not public health. In addition, there are a dozen business-related boards including accountancy and cosmetology (Pennsylvania Department of State 2002). Again, the field of public health is not among those covered by Pennsylvania licensing boards and commissions.

Pennsylvania is one of many states that have removed the requirement that the head of its state health department must be a physician (Pennsylvania Public Law 518 of July 2, 1996, Vol. 115, Section 4, p. 4-55). At the same time, the law created the new position of Physician General with the stated goal that this individual would serve as the primary advisor on medical issues to the Governor and to the Secretary of Health (id, p. 4-56) when the Secretary of Health was not a physician. Our first non-physician Secretary of Health was Robert Zimmerman, who has an MPH degree and had a long and respected career as a public health professional. Robert Muscalus, D.O., became the Commonwealth's first Physician General in February 1999. He left the position in March 2005. Our current Secretary of Health, Calvin Johnson, MD, MPH, is a physician, who also has excellent public health experience. New Jersey also changed its laws in 1990 to allow a non-physician to be its Commissioner of Health. The New Jersey experience has differed from Pennsylvania in that law has been the background of its two non-physician Commissioners of Health. Its first non-MD lawyer was appointed as Commissioner of Health in 1992 – as is Governor Corzine's present appointee. Both had extensive experience in legislative activities related to health care, but neither has any educational background or direct experience in public health or health care organizations. New Jersey has also appointed one physician during the time period that non-physicians have been eligible. In this case the physician was an internist with extensive practice and hospital experience, but with no public health background. However, New Jersey does have a State Board of Health that has statutory authorities and

oversight responsibilities. Pennsylvania, like many other states, no longer has a similar State Board of Health.

Implications to Public Health in Pennsylvania

Pennsylvania presents a microcosm of the major public health challenges facing our country. We have large urban areas which share many of the characteristic health disparities found in disadvantaged inner city areas. Yet Philadelphia and Pittsburgh are remarkably different demographically; Pittsburgh is notable for its aging population, with Allegheny County said to have the second oldest population of any county in the state. There is also a relative lack of a migrant Hispanic work force in Pittsburgh, reflecting the fact that job creation, which has been slow, has tended to be at the middle or upper end of the wage scale. Eastern urban areas in our Commonwealth must put more resources toward meeting the health challenges of poor documented and undocumented immigrants. Problems such as HIV/AIDS and violence tend to be more evident in Philadelphia than Pittsburgh. The rural parts of our state provide yet other challenges to public health that differ from those of our two major urban areas. It has become clear that rural health issues go well beyond access to care (Meit, 2005).

It has been conventional to describe the "three Pennsylvanias" as being Philadelphia, Pittsburgh, and a "T" of rural counties that extends across the north and central parts of the Commonwealth. This can be helpful in looking at Pennsylvania's public health needs. However, it does not tell the whole story. For example, reviewing the prevalence of smokeless tobacco use is an informative means of further distinguishing among the distinct cultural factors that affect public health in our state. Among the nine Pennsylvania health districts, male use of smokeless tobacco, as expected, is lower in cities than in rural areas. Yet the major gradient is east-west. The estimated prevalence of male users of smokeless tobacco in 2002-03 was 16% in Pennsylvania's Southwestern Health District and 15% in the Northwestern Health District as compared to 3% and 2% in the Northeastern and Southeastern Health Districts. Allegheny County had an estimated prevalence of 6%, three times higher than that for Philadelphia County. The Northcentral and Southcentral health districts, at 10% and 8%, were in between, confirming that there is

a geographical component whose cultural influences on the use of smokeless tobacco transcend usual urban-rural differences.

The example of smokeless tobacco is just one of many that support the concept that local knowledge is crucial to responding to public health needs. It would be inappropriate to assign the same priority to smokeless tobacco in eastern as compared to western Pennsylvania. The Allegheny County Health Department must confront health problems related to an Appalachian life style that are not all that common in Philadelphia County. Similarly, there are large Hispanic immigrant populations in cities in the eastern half of our Commonwealth. Such populations present challenges to public health authorities ranging from classical migrant health issues to the need to be sure that public health messages are understood by those to whom English is not a native language. Major programs to address rural public health issues have been developed at the Pennsylvania State University, which houses the Pennsylvania Office of Rural Health, and the University of Pittsburgh-Bradford. However, despite the local nature of many public health issues, there is a commonality in the core competencies needed to address these issues. These are the core competencies that are the basis for the NBPHE credentialing examination.

Pennsylvania stands out from other states in its relative lack of an identifiable public health workforce. A HRSA-sponsored study (Gebbie 2000) showed that in public health workforce per capita we ranked last among all 50 states and the District of Columbia. The difference was substantial: the public health workers per capita for Pennsylvania was 37/100,000 population while the average for the entire country was 138 and for our region was 174. Put another way, we would have to almost quadruple our public health workforce simply to achieve the national median, and more than quadruple it to achieve the median for our region.

A major reason for Pennsylvania's relative scarcity of identifiable public health workers is the lack of local health departments. Nationally, there are approximately 3,000 local health departments (Salinsky and Gursky 2007) – only seven of which are in Pennsylvania. Most of our 68 counties are covered by the state Department of Health which has regional offices in various locations throughout the state. I am unaware of any systematic study of whether our state's organizational system is better for public health than are more usual organizational systems in which there are many local county or municipal health departments in

addition to a state health department. However, the disparate and fragmented local and state public health organizational structure and responsibilities has been considered to be both a symptom of what ails public health, and a cause of its problems.

More information about Pennsylvania's state public health workforce is available from a 2007 ASTHO study (Association of State and Territorial Health Officials 2007). The average age of a PADOH public health professional is 49, slightly older than the national average of 47 years. One of the problems facing Pennsylvania and the nation is an expected turnover of the existing public health work force – 23% of the nation's public health workforce is eligible to retire by 2012 (Association of Schools of Public Health 2008) and for Pennsylvania the number is 29% (Association of State and Territorial Health Officials 2007). Secretary Calvin Johnson has noted this issue for Pennsylvania and has led the Department in dealing with a variety of public health workforce issues. He has made recruiting and retaining a highly skilled public health workforce one of his primary goals, along with developing initiatives to improve workforce accountability (Pennsylvania Department of Health 2007).

In addition to the failure to obtain adequate funding for Tobacco Cessation and Prevention, a glaringly evident symptom of the weakness of public health as a policy force in Pennsylvania is the 2003 repeal of the motorcycle helmet law, a repeal that was supported by Democratic Governor Edward Rendell. The dire predictions of the public health community have been more than borne out with data demonstrating a 32% increase in head injury deaths and a 42% increase in head injury-related hospitalizations (Mertz and Weiss 2008). Despite the highly publicized statement after his motorcycle incident by head-injured Steeler quarterback Ben Roethlisberger that he would have worn a helmet had that been the law, and despite newspaper editorials throughout the state supporting reinstitution of universal motorcycle helmet laws, any change in our state's motorcycle helmet coverage is unlikely.

One way to determine what is needed in any system is to stress the system. In essence, the post 9/11 anthrax outbreak and continued threat of bioterrorism, along with the need to meet emerging infections such as SARS and avian flu, has provided this stress. Studies of the ability of the

public health system to respond to an emerging natural or terrorist biothreat have provided ample documentation of the need for a transformation of public health. In addition to fragmented lines of authorities, there is a patchwork of capabilities and a workforce that already has too much to do with too little resources and too little training (Gursky 2005). Any public health emergency will require a highly trained workforce capable of a knowledgeable and flexible response. It also will require a surge capability that will allow rapid response without sacrifice of other public health functions. Substantial criticism has been directed at current preparedness activities as diverting resources and workforce from existing and necessary public health activities – for example, in recent congressional testimony the head of the Association of Public Health Laboratories called the national post 9/11 biosurveillance system a "parasite" on public health laboratory function (Downes 2008).

In the words of one observer, for preparedness to deal with natural or terrorist biological threats, public health should be considered a sector that needs to become a system (Gursky 2005). Training and sustaining a skilled workforce has been identified as one of the key challenges to ensuring public health preparedness.

Pennsylvania's public health workforce needs are substantial. New county and regional health departments are under consideration as are state initiatives to bolster the public health workforce. Providing a national core credential for the public health workforce will not by itself transform public health in Pennsylvania so it can effectively protect the public against all health challenges – but it is a necessary step toward a vibrant public health workforce responsive to longstanding public health threats and to the emerging problems of our times.

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References

Agency for Healthcare Research and Quality. 2006. "National Healthcare Disparities Report, 2005." Available at: http://www.ahrq.gov/qual/Nhdr05/nhdr05.htm.

American Medical Association. 2007. "Maintaining Medical Specialty Board Certification." American Medical Association House of Delegates Resolution 318.

Akhter, M. 2001. "Professionalizing the Public Health Workforce: The Case for Certification. *Journal of Public Health Management and Practice*. 7(4)" 46-49.

Albanese, M.A., G. Mejicano, W.M. Anderson, and L. Gruppen. 2008. "Building a Competency-based Curriculum: The Agony and the Ecstasy." *Advances in Health Sciences Education Theory and Practice*. May 15 (Epub ahead of print).

All Star Directories. 2002. "Teacher Certification and Licensure." All Education Schools. Available at: http://www.alleducationschools.com/faqs/certification.php.

Allegrante, J.P., R.W. Moon, M.E. Auld, and K.M. Gebbie. 2001. "Continuing-Education Needs of the Currently Employed Public Health Education Workforce." *American Journal of Public Health*. 91(8): 1230-34.

Airhihenbuwa, Collins O., Randall R. Cottrell, Matthew Adeyanju, M. Elaine Auld, Linda Lysoby, and Becky J. Smith. 2005. "The National Health Educator Competencies Update Project: Celebrating a Milestone and Recommending Next Steps to the Profession." *Health Education and Behavior*. 32:722.

Association of Schools of Public Health. 2005. ASPH Education Committee. *MPH Core Competency Development Project*. Available at: http://www.asph.org/document.cfm?page=851.

Association of Schools of Public Health. 2008. "Welcome to the ASPH CPH Study Guide." Available at: http://www.asph.org/cphstudyguide/.

Association of Schools of Public Health. 2008. *Confronting the Public Health Workforce Crisis: ASPH Statement on the Public Health Workforce*. Washington, DC.

Association of Schools of Public Health. 2000. Friday Letter No. 1089. *ASPH/APHA Steering Committee on Public Health Workforce Credentialing.* Available at: http://www.asph.org/FRIDAY/1089.pdf

Association of State and Territorial Health Officials (2007); State Public Health Workforce Survey Report. http://www.astho.org/pubs/WorkforceReport.pdf.

Baker Jr., Edward L., Margaret A. Potter, Deborah L. Jones, Shawna L. Mercer, Joan P. Cioffi, Lawrence W. Green, Paul K. Halverson, Maureen Y. Lichtveld, and David W. Flemming. 2005. "The Public Health Infrastructure and Our Nation's Health." *Annual Review of Public Health*. 26:303-318.

Calhoun, J.G., K. Ramiah, E.M. Weist, and S.M. Shortell. 2008. "Development of a Core Competency Model for the Master of Public Health Degree." *American Journal of Public Health*. July 16 (Epub ahead of print).

Committee on Educating Public Health Professionals for the 21st Century. 2003. *Who Will Keep the Public Health? Educating Public Health Professionals for the 21st Century*. Washington, DC: Institute of Medicine, the National Academies Press.

Council on Education for Public Health. 2008. "About CEPH." Available at: http://www.ceph.org/i4a/pages/index.cfm?pageid=3274.

Council on Linkages Between Academia and Public Health Practice. (2005) "Core Competencies for Public Health Professionals." Public Health Foundation. Available at: http://www.phf.org/competencies.htm.

Division of Medical Education. 2007. *Medical School Graduation Questionnaire: All Schools Summary Report*. Association of American Medical Colleges.

Downes, Frances Pouch. 2008. Statement of Dr. Frances Pouch Downes before the United States House of Representatives Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology of the Committee on Homeland Security; July 16, 2008

Forrest, Christopher B. 2006. "Strengthening Primary Care to Bolster the Health Care Safety Net." *Journal of the American Medical Association*. 295(9):1062-1064.

Garibaldi, Richard A., Carol Popkave, and Wayne Bylsma. 2005. "Career Plans for Trainees in Internal Medicine Residency Programs." *Academic Medicine*. 80(5):507-512.

Gebbie, K., J. Merrill, and H.H. Tilson. 2002. "The Public Health Workforce." *Health Affairs*. 21(6): 57-67.

Gebbie, K., and B.J. Turnock. (2006) "The Public Health Workforce, 2006: New Challenges." *Health Affairs*. 25(4): 923-33.

Gebbie, K., B.D. Goldstein, D.I. Gregorio, W. Tsou, D. Petersen, C. Mahan, and G.B. Silver. 2007. "The National Board of Public Health Examiners: Credentialing Public Health Graduates." *Public Health Reports*. 122(4):435-440.

Goldstein, Bernard D. 2008. "Credentialing in Public Health: The Time Has Come." *Journal of Public Health Management and Practice*. 14(1): 1-2

Goodman, David C., and Elliot S. Fisher. 2008. "Physician Workforce Crisis? Wrong Diagnosis, Wrong Prescription." *The New England Journal of Medicine*. 358(16): 1658-61.

Governmental Public Health Implementation Team (2004) *Final Report and Recommendations of the Governmental Public Health Implementation Team for the CDC Futures Initiative*. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services.

Gursky, Elin A. 2005. "Roundtable: When Terror Strikes – Preparing an Effective and Immediate Public Health Response." Statement presented to the U.S. Senate Committee on Health, Education, Labor, and Pensions Subcommittee on Bioterrorism and Public Health Preparedness – July 14, 2005.

Hernandez, Lyla M., and A. Wezi Munthali (Eds.). Committee on Training Physicians for Public Health Careers. 2007. *Training Physicians for Public Health Careers.* Washington, DC: The National Academies Press.

Iglehart, John K. 2008. "Spreading the Safety Net – Obstacles to the Expansion of Community Health Centers." *The New England Journal of Medicine*. 358(13): 1321-23.

Institute of Medicine Committee for the Study of the Future of Public Health. 1988. *The Future of Public Health.* Washington DC: National Academy Press.

Institute of Medicine Committee on Educating Public Health Professionals for the 21st Century. 2003. "Who Will Keep the Public Healthy Educating Public Health Professionals for the 21st Century." Washington DC: National Academy Press.

Institute of Medicine. 2007. "Training Physicians for a Public Health Career" Washington DC: National Academy Press.

Maeshiro, Rika. 2008. "Responding to the Challenge: Population Health Education for Physicians." *Academic Medicine*. 83: 319-20.

Mahan, C.S., and J.M. Malecki. 2004. "Confronting the Impending Public Health Workforce Crisis in America: Perspectives from Academia and Public Health Practice." *Florida Public Health Review*. 1: 4-7.

Meit, Michael. 2005. "Rural Public Health Preparedness: Setting the Agenda for Change." University of Pittsburgh Center for Rural Health Practice.

Mertz, Kristen J., and Harold B. Weiss. 2008. "Changes in Motorcycle-Related Head Injury Deaths, Hospitalizations and Hospital Charges Following Repeal of Pennsylvania's Mandatory Motorcycle Helmet Law." *American Journal of Public Health*. 98(8): 1464-1167.

Moser, J.M. 2008. "Core Academic Competencies for Master of Public Health Students: One Health Department Practitioner's Perspective." *American Journal of Public Health*. July 16 (Epub ahead of print).

National Board of Public Health Examiners. 2008. "Welcome to NBPHE." Available at: http://www.publichealthexam.org/about.cfm.

National Commission for Health Education Certification, Inc. 2002. "Why Certify?" Available at: http://www.nchec.org/whycert/certify.htm.

National Institutes of Health. 2008. "Dollars Awarded by State for 2007." Available at: http://report.nih.gov/award/trends/State_Congressional/StateOverview.cfm.

National Organization for Competency Assurance. 2007. "About Us." Available at: http://www.noca.org/GeneralInformation/AboutUs/tabid/54/Default.aspx.

Pennsylvania Department of State. 2002. "Professional Licensing Boards and Commissions." Available at: http://www.dos.state.pa.us/bpoa/cwp/view.asp?a=1104andQ=432596andbpoaNav=|.

Pennsylvania Department of Health. 2007. "Office of the Secretary." Available at: http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=3andQ=228259.

Pennsylvania Medical Society. 2008. "Doctors Working to Open Scranton Medical School." Available at: http://www.pamedsoc.org/Stories/Advancingprofession/CMC.aspx.

Perlino, C.M. 2006. "The Public Health Workforce Shortage: Left Unchecked, Will We Be Protected? *American Public Health Association Issue Brief*. 1-11.

Public Health Accreditation Board. 2007. "Public Health Accreditation Board (PHAB)." Available at: http://www.phaboard.org/.

Rall, David P. 1994. "Shoe-Leather Epidemiology – The Footpads of Mice and Rats." *The Mount Sinai Journal of Medicine*. 61(6): 504-8.

Roberts, Philip. 2008. "Practice Makes Perfect." *Solicitor's Journal*. 152(30).

Roemer, Milton I. 1986. "The Need for Professional Doctors of Public Health." *National Library of Medicine*. 101(1): 21-29.

Roemer, Milton I. 1988. "Preparing Public Health Leaders for the 1990s." *National Library of Medicine*. 103(5): 443-52.

Rosenblatt, Roger C., C. Holly A. Andrilla, Thomas Curtin, et al. 2006. "Shortages of Medical Personnel at Community Health Centers: Implications for Planned Expansion." *Journal of the American Medical Association*. 295(9):1042-1049.

Salinsky, Eileen, and Elin A. Gursky. (2006) "The Case for Transforming Governmental Public Health." *Health Affairs*. 25(4):1017-1028.

Snowbeck, Christopher. March 4, 2000. "Tobacco Settlement Debate Smolders: Researcher Angers Anti-Smoking Forces" *Pittsburgh Post-Gazette* http://www.google.com/search?hl=enandq=Herberman+testimony+pennsylvania+tobacco.

Sommer, A., and M. Akhter. 2000. "It's Time We Became A Profession." *American Journal of Public Health*. 90: 845-46.

Sonderman, Jeff. 2006. "$35M Set Aside for Medical School in Scranton." *The Times-Tribune*. June 29, 2006.

United States Central Intelligence Agency. 2008a. "The World Factbook (Rank order-Infant mortality rate, 2008 estimates)." Available at: https://www.cia.gov/library/publications/the-world-factbook/rankorder/2091rank.html.

United States Central Intelligence Agency. 2008b. "The World Factbook (Rank order-Life expectancy at birth, 2008 estimates). Available at: https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html.

World Health Organization. 2008. "Frequently Asked Questions." Available at: http://www.who.int/suggestions/faq/en/index.html.