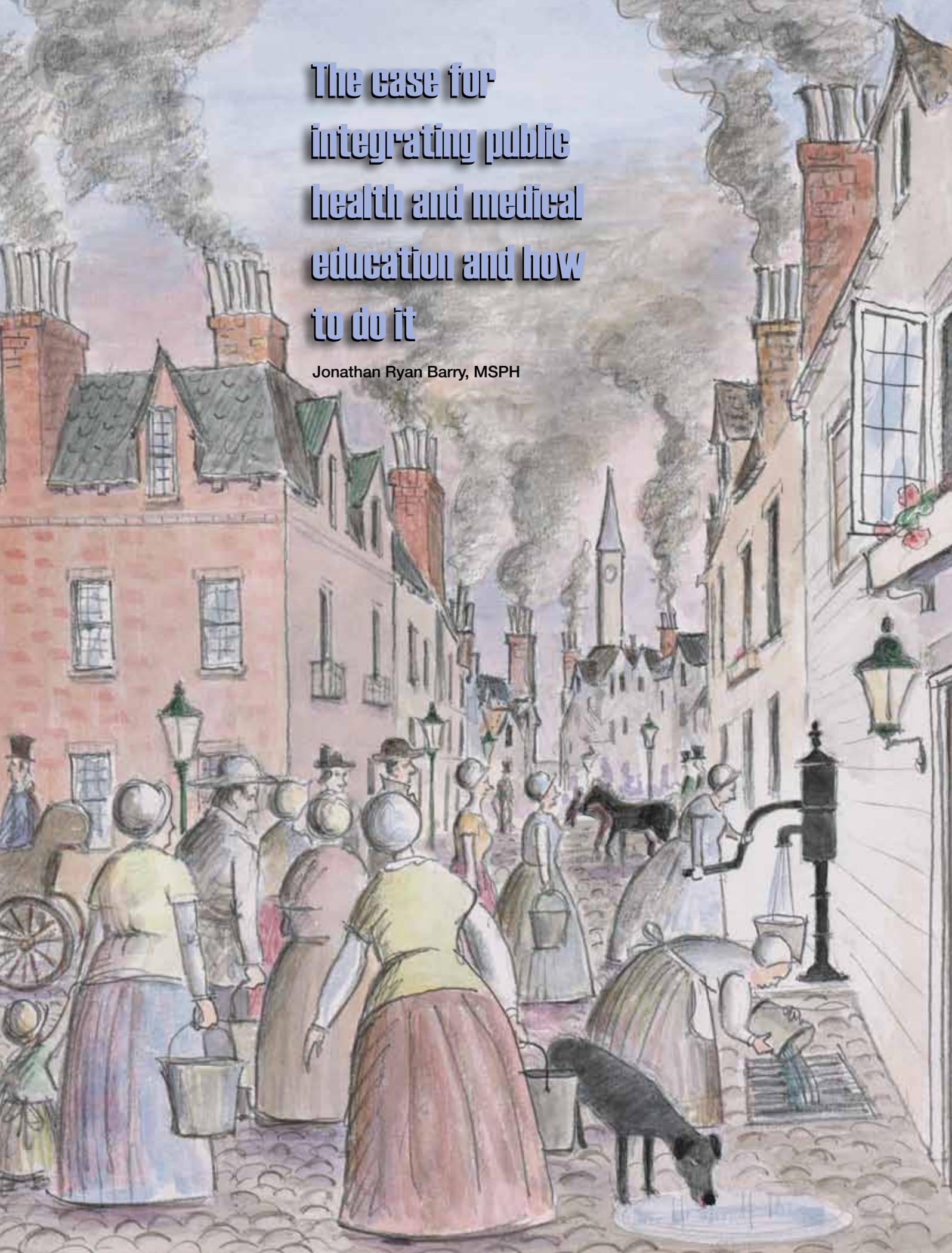




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The case for integrating public health and medical education and how to do it

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Here's a typical question among medical students: "What specialty are you interested in?" The most common replies—internal medicine, emergency medicine, or pediatrics¹—may draw nods of approval, but my response, preventive medicine, many times provokes a questioning look from my peers.

To be honest I, too, would probably know little about preventive medicine—and would most likely not be pursuing it as my career—had I not first deferred admission to medical school and earned a Master of Science in Public Health (MSPH). Years ago, an eighth-grade hospital tour unexpectedly piqued my interest in public health. At the end of the tour, our guide, a public relations employee, anxiously took questions and I asked why the hospital's new cardiac care center was needed. Slightly perplexed, he responded that the growing rate of cardiovascular disease in the area created the need. I nodded and he smiled back, presumably confident that he had satisfied my curiosity. The truth is, however, he only fueled it further. Sure, perhaps the current clinical demand justified the new cardiac center, but what underlying factors *caused* this need? Asking why has ultimately helped me to shape my future and prompted me to lobby for a new, more public health-centric direction in American medical education.

Let's step back for a moment from the modern dogma that medical advances will always lead us forward. It's true that today we live longer than ever before thanks to technological, surgical, and pharmacological advances.² I fear, though, that we are reaching a point of diminishing returns.³ Even with our many advances, we still face many ubiquitous threats: rising levels of obesity, adolescent type II diabetes, and bacterial drug resistance, among others.⁴⁻⁶ These threats are best managed by effective public health surveillance methods and treatment approaches.^{7,8} Prevention would be better!

Modern medical education deemphasizes the traditional public health and preventive medicine curriculum, downplaying the role of public health and its ability to improve health care. More than ninety-five percent of current medical education curriculum is devoted to diagnosis and treatment of diseases in individual patients (versus populations), and less than half a percent of faculty are trained in public health or preventive medicine.⁹ Perhaps because of this, data show that our public health infrastructure is growing weaker. I argue that to strengthen this weakening infrastructure we must fully integrate these separate educational disciplines into joint medicine-public health programs for *all* medical students.

Previous page, Public health in 1854 London: The Broad Street pump. Illustration by Jim M'Guinness

The American public health workforce is aging. In 2003, the Association of State and Territorial Health Officials (ASTHO) conducted the State Public Health Workforce Survey and concluded that twenty-four percent of public health workers were then eligible for retirement. A follow-up survey, completed in 2007, reported that the percentage of the public health workforce eligible to retire by 2012 had increased to twenty-nine percent.¹⁰ In addition, a similar survey conducted by the National Association of County and City Health Officials reported that vulnerable health departments (i.e., those serving populations fewer than 25,000) reported the largest percentages of retirement-eligible staff.¹¹ Moreover, ASTHO notes that by 2012 over fifty percent of some state health agency workforces will be eligible to retire.¹⁰

Concurrently, the total number of public health physicians and preventive medicine residency positions is decreasing. From 1970 to the early 2000s, the number of public health physicians has dropped from 2.3 to 0.8 percent.⁹ In addition, the number of preventive medicine residency programs has decreased from ninety in 1999 to seventy-five in 2009, and the total preventive medicine residency positions declined by twenty percent (434 versus 348) between 1996 and 2008.^{9,12}

As veteran public health workers exit and fewer new graduates enter our nation's public health system, leadership deteriorates. Eleven states have no appointed physician leaders in their entire local public health systems, and twenty-nine states lack physician state health directors or commissioners.¹³ Not only is physician leadership in public health departments declining, but this decline also correlates with less effective public health responses. In 1997, twenty-three percent of local health agencies were directed by physicians, with only eight percent led by physicians who held MPH degrees or were American College of Preventive Medicine fellows.¹³ A 2003 study by Dr. Laura Kahn, research scholar with the Program on Science and Global Security at the Woodrow Wilson School of Public and International Affairs of Princeton University, on the leadership practices in American public health departments concluded that departments lacking physician leaders handled public health outbreaks and other medical emergencies less well than those directed by physicians.¹³

Public health medical education deficiencies

I analyzed forty areas of medical education instruction from thirteen of the latest Association of American Medical Colleges (AAMC) Graduation Questionnaires (1998 through 2010). In these annual questionnaires, students rated their medical education in specific areas as inadequate, appropriate, or excessive. Using the interquartile range to develop a four-letter grading scale, I then compared these educational areas and found several deficiencies.

Graduating medical students rated instruction in many areas vital to improving the nation's public health infrastructure as inadequate. Of twenty-one educational areas related to

Area of Instruction	Type of Skill	Mean Percent	Grade	Area of Instruction	Type of Skill	Mean Percent	Grade
Patient interviewing skills	M	2.32	A	Epidemiology	P	22.20	C
Care of hospitalized patients	M	2.59	A	Culturally appropriate care for diverse populations	P	22.20	C
Physician-patient relationships/communication skills	M	4.59	A	Health determinants	P	22.55	C
Professionalism	M	4.65	A	Community medicine	P	23.31	C
Diagnosis of disease	M	5.22	A	Health issues for underserved populations/health care disparities	P	24.13	C
Problem solving	M	6.60	A	Biostatistics	P	27.51	C
Patient confidentiality and privacy/HIPAA	M	7.43	A	Public health	P	28.73	C
Clinical reasoning	M	7.80	A	Health surveillance strategies	P	34.02	C
Management of disease	M	8.46	A	Role of community health and social service agencies	P	35.22	C
Drug and alcohol abuse	M	9.55	A	Environmental health	P	40.88	C
Ethical decision making	M	9.96	B	Health care quality improvement/assurance	P	41.18	F
Health maintenance	M	10.08	B	Health care systems	P	42.10	F
Physical examination skills	M	11.45	B	Global health issues	P	42.90	F
Care of ambulatory patients	M	11.48	B	Complementary and alternative medicine	P	44.66	F
Interpretation of laboratory results	M	12.48	B	Health policy	P	45.22	F
Biomedical ethics	M	12.96	B	Biological, chemical, and natural disaster management	P	46.96	F
Evidence-based medicine in general	M	13.09	B	Occupational medicine	P	47.37	F
Disease prevention	P	15.58	B	Health services financing	P	52.93	F
Physician-physician communication skills	M	16.79	B	Managed care	P	55.97	F
Continuity of care	M	19.85	B	Medical economics	P	64.23	F

The forty areas of instruction are taken from the practice of medicine areas in the AAMC Graduation Questionnaire for years 1998 through 2010. The mean percentage is the average percentage of medical students reporting that instruction in a particular area is "inadequate." The grade is based on a four-letter grading scale as follows: between 0 and 9.76 = A; between 9.76 and 21.03 = B; between 21.03 and 41.03 = C; greater than 41.03 = F.
M = Medical practice skill, P = public health practice skill.

public health, ten achieved a grade of C (“satisfactory instruction”) and ten earned a grade of F (“incompetent instruction”). Only one public health practice area earned a B (“good instruction”) and none merited an A. Conversely, of nineteen medical practice skills analyzed, none earned a grade lower than B, and there is an almost equal number of A’s (10) and B’s (9).

The average mean percentage of students who rated medical core practice instruction as inadequate was 9.33 percent versus 37.14 percent who rated public health core practice area instruction as inadequate.

Data from both the Council on Graduate Medical Education (COGME) and the Institute of Medicine (IOM) further highlight this lack of instruction. In its 2010 “Physician Education for a Changing Health Care Environment,” COGME details a need to review curriculum content and learning processes in modern medical schools, and recommends that medical schools emphasize public health-related disciplines, including epidemiology and population-based approaches, health care policy and systems, and disease prevention and wellness.¹⁴ The IOM’s Committee on Training Physicians

for Public Health Careers recently estimated that the United States faces a 10,000-person shortage in the number of public health physicians.¹⁵

What to do?

Dr. Laura Kahn wrote in a 2003 paper in *Health Affairs* that “The nation’s schools of medicine should collaborate with schools of public health to provide high-quality courses relevant to macro medicine practice, so that all medical school graduates can be effective members of public-private efforts.”¹³ I suggest taking Dr. Kahn’s recommendation even farther: we must fully integrate public health education with medical school curriculum for all graduating medical students. Today, only 55.8 percent of all medical schools offer joint MD/MPH or DO/MPH degrees. A national public health curriculum would give all medical students a solid education in public health.^{16,17}

Key stakeholders, including the AAMC, Association of Schools of Public Health, and American Association of Colleges of Osteopathic Medicine, could develop and mount



About Jonathan Ryan Barry

I graduated from Wake Forest University in 2007, where I studied biology and health policy and administration. Deferring medical school, I then matriculated at the London School of Hygiene & Tropical Medicine where I earned my MSPH, specializing in health promotion and management. While in London, I was financially supported by a Rotary International Ambassadorial Scholarship, and it was my pleasure to speak at eighty Rotary Clubs in the United States and England. In July 2008, I was commissioned an ensign in the U.S. Navy Reserve and accepted into the Health Professions Scholarship Program. I am a third-year medical student at the University of Tennessee College of Medicine. I would like to serve as a Navy preventive medicine physician. I strongly believe that preventive medicine is awaiting a fresh renaissance, and I want to contribute my talents to increasing our collective health through innovation and personal responsibility.

an educational innovation competition to create an online national MPH curriculum for all American medical students. Schools would compete in submitting their own existing in-house MPH-related coursework, which could serve as the basis for a national MPH curriculum for all medical students.

The educational innovation competition would be used to design and implement the proposed national MPH curriculum:

1. Stakeholders/organizers would be identified and brought on board, and a steering committee will delineate the focus areas for the curriculum.
2. The committee would announce the list of public health focus areas and recruit schools of public health and schools of medicine to submit lesson plans, course blueprints, and examination questions for specific courses within a particular focus area.
3. The committee would evaluate the submitted lesson plans and other documents, and select the ones that will compose the topical courses within each public health focus area.
4. The steering committee would work with a panel of educators and a technology partner to develop and implement secure, online portals to provide access to course materials.
5. Medical students pilot the courses.
6. All medical students begin taking classes.

The MPH academic year

Medical students would begin their MPH year as the first year of a new nationwide five-year joint medicine-public health program. I propose six academic focus areas: public policy and

governance, environmental health, health services management, health services research, health promotion, and general public health. Each area will consist of modular coursework; several courses can be used to fulfill requirements for different focus areas. The modular design would not only accelerate the curriculum's development but would also decrease overall operating costs and curriculum administration.

First-semester modules would serve as essential (or core) courses for the MPH while term two and three modules would be elective courses chosen by medical students depending on which focus area they choose to pursue. These online courses would integrate videos, computer presentations, and interesting case studies. Review quizzes would be available for students to test their knowledge, and formal assessments for each course would be completed via secure, online portals. Coincidentally, this online teaching strategy will not only serve as an economical approach in which to develop and administer the MPH curriculum, but it will also support a COGME recommendation in which medical schools should utilize the internet and distance learning technology in the educational process.¹⁴

An overall curriculum change integrating public health and medical education will reinforce the American public health infrastructure and provide trained physicians for public health leadership positions. It may also increase the number of medical students who choose to enter primary care, which may also improve access to primary care. This will not only reduce reliance on specialty care but may also improve the efficiency and quality of health care delivery.²¹

Regardless of specialty, medicine-public health students should be able to select a concentration from one of the focus areas to complement their personal interests and career objectives. New focus areas could be added to keep up with national health trends and medical student interests. Using existing schools of medicine and public health to jointly develop the MPH curriculum should result in high-quality courses and class materials at low costs and administrative overhead.

The Committee on Educating Public Health Professionals for the 21st Century (CEPHP) recommends that "serious efforts be undertaken by academic health centers to provide joint classes and clinical training in public health and medicine" and that "a significant proportion of medical school graduates should be *fully* trained in the ecological approach to public health at the MPH level."²² The CEPHP further notes that "medical schools should partner with accredited programs in public health to provide for public health education."²² An educational innovation competition to assemble medicine-public health curriculum would uniquely accomplish that task.

The recent passage of the Patient Protection and Affordable Care Act will likely advance substantial changes to the American medical care landscape. One of the most significant yet under-emphasized aspects of the Act is the creation of the National Prevention, Health Promotion and Public Health

Council.²³ President Obama has charged the Council, chaired by the U.S. Surgeon General, to develop a National Prevention and Health Promotion Strategy.²³ This presents a tremendous opportunity to highlight prevention and wellness, and perhaps this renewed focus on preventive services will help to begin a national dialogue on public health education.

When I think about my eighth-grade hospital tour, I feel that my asking “Why?” has not only shaped me into the medical-public health student that I am today but also into the medical-public health physician that I will be tomorrow. Asking “Why?” has broadened my scope of thinking about health, and I look forward to the patients and populations that I will serve in the future. I hope my argument has piqued your interest and that now you’ll find yourself asking “Why *not*?” Why not integrate public health and medical education? The need is clear, the consensus is there, and the national focus on prevention is growing. Together let’s ponder “Why not?” and make it happen.

References

1. National Resident Matching Program. Results and Data: 2010 Main Residency Match. Washington (DC): National Resident Matching Program; 2010: 4. Available at: <http://www.nrmp.org/data/resultsanddata2010.pdf>.
2. Miniño AM, Xu J, Kochanek KD. Deaths: Preliminary data for 2008. *National Vital Statistics Reports* 2010; 59. Available at: http://www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_02.pdf.
3. Charlton BG, Andras P. Medical research funding may have over-expanded and be due for collapse. *Q J Med* 2005; 98: 53–55.
4. Centers for Disease Control and Prevention. Overweight and Obesity. <http://www.cdc.gov/obesity/data/trends.html#State>.
5. Centers for Disease Control and Prevention. Diabetes Public Health Resource. http://www.cdc.gov/diabetes/projects/diab_children.htm.
6. World Health Organization. New survey finds highest rates of drug-resistant TB to date. <http://www.who.int/mediacentre/news/releases/2008/pr05/en/index.html>.
7. Kumanyika SK, Obarzanek E, Stettler N, et al. Population-based prevention of obesity: The need for comprehensive promotion of healthful eating, physical activity, and energy balance—A scientific statement from American Heart Association Committee for Prevention (Formerly the Expert Panel on Population and Prevention Science). *Circulation* 2008; 118: 428–64.
8. Gushulak BD, MacPherson DW. Population mobility and infectious diseases: The diminishing impact of classical infectious diseases and new approaches for the 21st century. *Clin Infect Dis* 2000; 31: 776–80.
9. Hull SK. A larger role for preventive medicine. *Virtual Mentor* 2008; 10: 724–29.
10. Association of State and Territorial Health Care Workers. 2007 State Public Health: Workforce Survey Results. Arlington (VA): Association of State and Territorial Health Care Workers; 2008: 17. Available at: <http://www.astho.org/Display/AssetDisplay.aspx?id=500>.
11. National Association of County & City Health Officials. 2005 National Profile of Local Health Departments. Washington (DC): National Association of County & City Health Officials; 2006: 35.
12. Brenner S, Siu K. Preventive medicine and public health residency training: Federal policy and advocacy opportunities. *J Public Health Management Practice* 2009; S33–S39.
13. Kahn LH. A prescription for change: The need for qualified physician leadership in public health. *Health Aff* 2003; 22: 241–48.
14. Council on Graduate Medical Education. Physician Education for a Changing Health Care Environment. Thirteenth Report. Washington (DC): U.S. Department of Health and Human Services, Health Resources and Services Administration; 1999: 96–97. Available at: <http://www.cogme.gov/13.pdf>.
15. Hernandez LM, Munthali AW, editors. Committee on Training Physicians for Public Health Careers, Board on Population Health and Public Health Practice, Institute of Medicine. Training Physicians for Public Health Careers. Washington (DC): The National Academies Press; 2007: 96–97. Available at: http://www.nap.edu/openbook.php?record_id=11915&page=R1.
16. Association of American Medical Colleges. Directory of MD/MPH Educational Opportunities. <https://www.aamc.org/student/46546/mdmph>.
17. American Association of Colleges of Osteopathic Medicine. Dual Degree Programs. In: 2012 Osteopathic Medical College Information Book. Chevy Chase (MD): American Association of Colleges of Osteopathic Medicine; 2011. Available at: <http://www.aacom.org/resources/bookstore/cib/Documents/2012cib/2012cib-whole.pdf>.
18. Member Medical Schools. Association of American Medical Colleges. http://services.aamc.org/memberlistings/index.cfm?fuseaction=home.search&search_type=ms.
19. American Association of Colleges of Osteopathic Medicine. U.S. Colleges of Osteopathic Medicine. <http://www.aacom.org/about/colleges/Pages/default.aspx>.
20. Association of Schools of Public Health. Member Schools. <http://www.asph.org/document.cfm?page=200>.
21. Medicare Payment Advisory Commission. Report to Congress: Reforming the Delivery System. Washington (DC): Medicare Payment Advisory Commission; 2008: 27–28. Available at: http://www.medpac.gov/documents/Juno8_EntireReport.pdf.
22. Gebbie K, Rosenstock L, Hernandez LM, editors. Committee on Educating Public Health Professionals for the 21st Century, Board on Health Promotion and Disease Prevention, Institute of Medicine. Who Will Keep the Public Healthy? Educating Public Health Professionals for the 21st Century. Washington (DC): The National Academies Press; 2003: 135. Available at: http://www.nap.edu/openbookphp?record_id=10542&page=135.
23. The Patient Protection and Affordable Care Act. Public Law 111-148; 2010: 538–41. Available at: <http://origin.www.gpo.gov/fdsys/pkg/PLAW-111publ148/pdf/PLAW-111publ148.pdf>.

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