

# Pharmacy and public health: A pathway forward

Mark A. Strand and Donald R. Miller

---

## Abstract

**Objective:** To identify a pathway forward for practicing pharmacists in supporting public health initiatives by applying the five core competencies of public health.

**Summary:** The pharmacist is well positioned to improve population health. Until now, increased impact of pharmacists has been based on the expansion of patient services rather than guided by a population approach to health. To increase their effectiveness and breadth of impact, pharmacists would benefit from applying the five core competencies of public health (social and behavioral science, health policy and administration, epidemiology, biostatistics, and environmental health sciences) to the practice of pharmacy. This article aims to explain how each of the core competencies applies to pharmacy practice and how pharmacists might apply public health skills in a more specific manner.

**Conclusion:** With increased clarity of the role of public health, and mastery of the five core competencies of public health, pharmacists can make unique and valuable contributions to the health of the public.

**Keywords:** Public health, population health, pharmacy practice.

*J Am Pharm Assoc.* 2014;54:193–197.  
doi: 10.1331/JAPhA.2014.13145

Received July 9, 2013, and in revised form September 5, 2013. Accepted for publication October 25, 2013. Published online in advance of print, February 28, 2014.

**Mark A. Strand, PhD**, is Associate Professor, Pharmacy Practice, Master of Public Health Program; **Donald R. Miller, PharmD**, is Chair and Professor of Pharmacy Practice, College of Pharmacy, Nursing, and Allied Sciences, North Dakota State University, Fargo.

**Correspondence:** Mark A. Strand, PhD, Pharmacy Practice, Master of Public Health Program, College of Pharmacy, Nursing, and Allied Sciences, North Dakota State University, 118L Sudro Hall, Fargo, ND 58101. Fax: 701-231-7606. E-mail: Mark.Strand@ndsu.edu

**Disclosure:** The authors are contributors to the Public Health Certificate Module mentioned in this article. They declare no conflicts of interest or financial interests in any other product or service mentioned in this article, including grants, employment, gifts, stock holdings, or honoraria.

Public health planners have long recognized that pharmacists are well positioned to engage in activities that contribute to improved health of the public.<sup>1,2</sup> Through early reporting of adverse drug reactions, delivering immunizations, providing lifestyle education, conducting screenings, and taking a stand against the tobacco industry, pharmacists have made their mark in public health.<sup>3,4</sup>

Goals of the Affordable Care Act, signed into law in 2010, include expanding access to health care and providing dedicated funding for public health initiatives. Implementation of this law is now largely complete, and its provisions may provide an opportunity for pharmacists to contribute even more to improving disease prevention, wellness, and population health. For example, pharmacists who have negotiated enabling contracts can participate in the provision of free preventive services such as an annual wellness visit, screenings for cancers and other illnesses, and vaccinations. Improving the value obtained in the American health system will come from improving the health and well-being of communities in addition to expanding clinical care.<sup>5</sup>

Pharmacists' current public health involvement remains limited or is not well documented.<sup>6</sup> Some of the barriers include lack of time, working in a large pharmacy, and lack of support from one's supervisor.<sup>7</sup> Low self-efficacy and vague concepts of what public health

means also limit the involvement of pharmacists in public health activities.

In this article, we explore the potential for practicing pharmacists to participate more fully in public health initiatives and improve the health of the populations they serve. To inform this discussion, we conducted a search in PubMed and International Pharmaceutical Abstracts using the keywords *pharmacy* and *public health* in the title or abstract. This search yielded 192 and 229 references, respectively. From this search, we identified and reviewed 57 papers relevant to the topic of collaboration in pharmacy and public health. This article presents a summary of key concepts from our review of these articles, but not all are cited here.

### A map to guide the way

Eight years ago, the American Public Health Association (APHA) endorsed the role of pharmacists in public health.<sup>8</sup> One year later, standards were implemented requiring schools of pharmacy to educate students to provide public health services.<sup>9</sup> However, the concern of the APHA—"the public health role of the pharmacist is yet to be clearly defined, broadly recognized and sufficiently promoted"—has not been thoroughly addressed.

The time is ripe to clarify the role of public health within a pharmacy practice context. Many models and frames could be used to conceptualize this relationship, but we believe that pharmacists will, while continuing to practice traditional pharmacy, also integrate the five core competencies of public health into their work: social and behavioral science, health policy and administration, epidemiology, biostatistics, and environmental health sciences.<sup>10</sup> This would be a form of enhanced-value pharmacy practice.

For pharmacists to have a more substantial public health impact, they will need to extend their perception and practice of public health from providing clinical services that affect their communities, such as lipid screening and immunizations, to increasing their mastery of the five core competencies of public health. Consider the following ways of applying these competencies in community and other types of pharmacies.

### Social and behavioral science

Compared with pharmacy and other medical disciplines, public health has the key feature of focus on the health of a population of people. A population is a group of people with some shared characteristic. The population may be considered as the individuals frequenting one's pharmacy, the population from which those individuals came, or everyone in the community regardless of their relationship with a specific pharmacy.

By definition, populations have shared social and environmental influences. These influences may be positive, but frequently populations have influences such as poverty, weak social support, unsafe communities, poor

### At a Glance

**Synopsis:** This commentary, by two individuals who have worked at the interface of pharmacy and public health, considers ways that public health can be applied in pharmacy practice. Although the potentially important impact of pharmacists on public health has been recognized for some time, the relationship between pharmacy practice and public health has not been well defined. Additionally, a pathway leading to a more ideal application of public health in pharmacy practice has not been developed. The authors propose using the five core competencies of public health as the pathway forward for public health in pharmacy: social and behavioral science, health policy and administration, epidemiology, biostatistics, and environmental health sciences.

**Analysis:** *Historically, pharmacists have been accessible, community-based health professionals. Many factors are causing pharmacists to increase their scope of practice and influence in the health of populations. Guiding this development forward along the lines of the five core competencies of public health may provide the clarity and specificity needed to make this process more tangible and measurable.*

literacy, or lack of insurance, and each of these can impinge on individual behavior. With skills in behavioral science, pharmacists can better understand the communities in which they work and develop more empathic approaches for targeting factors that could improve medication use in their communities. Pharmacists can address social and behavioral issues in the community by being culturally competent, promoting diversity in the pharmacy workforce, and providing assistance to uninsured patients.<sup>8</sup>

Health screening is another example of public health outreach of pharmacists. Screenings can and should be targeted to unique needs of a community; an example is screening for human immunodeficiency virus (HIV) in communities with a high incidence of HIV infections.<sup>11</sup>

### Health policy and administration

A public health perspective prioritizes policies that are in the best interests of the greatest number of members of a population, with particular concern for vulnerable members of the group. For example, pharmacists are the first people to notice when patients fail to pick up their medications. The primary reason for failing to pick up medications is often financial hardship, not irresponsibility.<sup>12,13</sup> By understanding who these patients are and knowing the broader determinants of nonadherence, pharmacists are well positioned to advocate for these vulnerable people within their health-system population. Pharmacists can also leverage their influence to enhance services for such patients through legislative or economic means.

The voice of the pharmacist is greatly magnified when members of the profession collaborate with other health care professionals to advocate their positions. By working closely with other professions on advocacy, the pharmacists' message is strengthened and the pharmacist is seen as an essential part of the public health team.<sup>14</sup>

From a microlevel perspective, pharmacists are becoming key players in patient-centered medical homes and in accountable care organizations.<sup>15,16</sup> From a macrolevel perspective, pharmacists have much to contribute to public policy debates by providing legislators and regulators with background data, testimony, or feedback.<sup>8</sup> For example, on October 1, 2013, California Governor Jerry Brown signed SB 493, affording pharmacists provider status.<sup>17</sup> This will help address the shortage of primary care providers by expanding the scope of services that can now be covered by pharmacists. This new opportunity was achieved by the informed advocacy of pharmacists who understand health policy. Pharmacists need to participate actively in community and national health organizations, and to do so they need a grasp of health policy that incorporates pharmacy into a broad health sciences framework.

### Epidemiology

Epidemiology asks key questions about diseases in the target population: what is the disease, who has it, where is it found, when does it appear, and why might this be so? With public health problems such as prescription drug abuse or increased rates of diabetes, pharmacists have a unique role in understanding the epidemiology of these problems. Many pharmacists have access to prescription data or pharmacy-related information about their patients. Pharmacists tend to use these databases for quality review or to improve marketing of pharmacy services. Why not also query such databases to determine the unique characteristics of one's own patient population and thereby better understand the determinants of local community health? Clinical practitioners, including pharmacists, can use their observations and personal experience to develop hypotheses that could be explored using the tools of epidemiology. For example, one might be able to identify trends in medication use and determine common characteristics of those uses. Data will then inform the development of programs and assist in prioritizing and delivering new interventions.

### Biostatistics

Pharmacies are located in communities where few other health care options are available. In communities of all types, community pharmacies are the most accessible health care setting. These factors make them natural sentinel sites for population trends. Pharmacists can assist in tasks of many types, including reporting of adverse drug reactions and observing prescribing trends.

For example, a vigilant young pharmacist working in the Indian Health Service in Montana took note of increased prescription of inhaled beta-2 agonists for patients with asthma. Using basic skills in biostatistics, he was able to determine that local children had an asthma rate twice the national average.<sup>18</sup>

A pharmacist equipped with skills in biostatistics—such as comparing mean differences and disaggregating data by demographic characteristics—is well prepared to explore trends observed, thus allowing new interventions to be proposed. Claims data are available to pharmacists to evaluate medication dispensing patterns, perform cost analyses, and determine community-level usage trends in a population of patients.<sup>19</sup> This application of biostatistics to answer epidemiologic questions pertinent to pharmacy led to development of the discipline of pharmacoepidemiology.

### Environmental health sciences

Environmental health sciences cover a wide range of issues, from natural disasters to the impact on human health of hazardous materials in the environment. The latter area in particular stands at the interface of chemistry and human behavior. Some examples include the exposure of sanitation workers to a wide variety of haz-

ardous materials and the risks to the health of health care workers who handle radiation or chemotherapy.

We know of a hospital pharmacy department in a major health care system that has developed a system-wide policy to avoid unintentional exposure to all hazardous substances. Any community may face problems with water pollution, hazardous substance disposal, or waste management. These are all opportunities for pharmacists to apply their pharmaceutical knowledge to environmental health issues.

Also important in community planning is creating an environment that enables people to choose healthy behaviors.<sup>20</sup> Pharmacies could contribute indirectly to chronic disease prevention by choosing to prioritize the sale of health-enhancing products and not stocking products with known health hazards, including alcohol and tobacco products.

### Implications for pharmacy education

The pathway envisioned in this article is one where pharmacists increase their impact on population health by applying to their practice one or more of the five core competencies of public health. It is not expected that the pharmacist will become competent in all five areas but, based on interest and need, specialize in one or more of the competencies. With the anticipated expansion of primary health care in the United States, we envision the pharmacy as a center for community health. Competence in public health will be essential to realizing this vision.

Student pharmacists have demonstrated enthusiasm about public health activities.<sup>21</sup> This creates the opportunity for more integration of pharmacy and public health as collaborative health sciences.<sup>22, 23</sup> The recent pharmacy education outcomes approved by the American Association of Colleges of Pharmacy highlight the essentiality of population health in pharmacy education.<sup>24</sup>

Incorporating public health into pharmacy education includes at least four essential elements. These have the potential to create a pathway leading to maximal involvement of pharmacy in public health.

First, schools of pharmacy should prioritize public health education, either through a designated course or as woven throughout existing courses. Course content should be rooted in the five core competencies of public health in such a way that they are applicable to pharmacy practice.

Second, dual or successive degree programs allow pharmacists to earn public health training either with other pharmacists in a doctor of pharmacy/master of public health dual-degree program or with an interdisciplinary cohort of students in a general master of public health program.

Third, practicing pharmacists need easy access to public health training. Public health training modules

that can meet continuing education requirements while simultaneously enhancing their public health competencies would be ideal. With this goal in mind, North Dakota State University has collaborated with pharmacy experts from around the country to launch a Public Health Certificate module.

Finally, collaborative research in public health and pharmacy is needed to clarify and strengthen the theoretical perspectives underlying the use of public health in pharmacy. This research could focus on pharmacy practice, pharmaceutical sciences, and pharmacy education. The goal would be interdisciplinary collaboration in a synergistic way that improves pharmacy practice and positively affects population health.<sup>25</sup>

### Conclusion

Progress in public health and pharmacy requires integration of public health competencies into practice; public health should not be viewed as a separate responsibility with which to task pharmacists. Pharmacy is ideally suited to contribute to population health in unique and valuable ways. To achieve this contribution, pharmacists need training in the five core competencies of public health.

As a multidisciplinary field, public health can also benefit from the participation of pharmacy. A preferred future involves enhancing the skills of practicing pharmacists so they can apply public health in their practice. Some pharmacists might even choose to pursue public health as a career. Both of these approaches have the potential to expand the scope of influence of pharmacists, increase their credibility, and improve the health of populations they serve.

### References

1. Shannon SB, Bradley-Baker LR, Truong HA. Pharmacy residencies and dual degrees as complementary or competitive advanced. *Am J Pharm Educ.* 2012;76(8):145.
2. Zellmer WA, Beardsley RS, Vlasses PH. Recommendations for the next generation of accreditation standards for doctor of pharmacy education. *Am J Pharm Educ.* 2013;77(3 Article 45):1–9.
3. Farris KB, Johnson KA. Pharmacists in public health: it's a good start! *J Am Pharm Assoc.* 2010;50:128–130.
4. McBane SE, Corelli RL, Albano CB, et al. The role of academic pharmacy in tobacco cessation and control. *Am J Pharm Educ.* 2013;77(5):93.
5. Kottke T. Reversing the slide in U.S. health outcomes and deteriorating health care economics. *Mayo Clin Proc.* 2013;88(6):533–535.
6. Eades CE, Ferguson JS, O'Carroll RE. Public health in community pharmacy: a systematic review of pharmacist and consumer views. *BMC Public Health.* 2011;11:582.
7. O'Loughlin J, Masson P, Déry V, et al. The role of community pharmacists in health education and disease prevention: a survey of their interests and needs in relation to cardiovascular disease. *Prev Med.* 1999;28(3):324–331.

8. American Public Health Association. The role of the pharmacist in public health. Washington, DC: American Public Health Association; 2006.
9. Accreditation Council for Pharmacy Education. Accreditation standards and guidelines: professional degree program. 2007. [www.acpeaccredit.org/standards/default.asp](http://www.acpeaccredit.org/standards/default.asp). Accessed August 1, 2013.
10. Association of Schools of Public Health Education Committee. Master's degree in public health core competency model. Washington, DC: Association of Schools of Public Health; 2006.
11. Calderon Y, Cowan E, Rhee JY, et al. Counselor-based rapid HIV testing in community pharmacies. *AIDS Patient Care STDs*. 2013;27(8):467–473.
12. Steiner JF. Rethinking adherence. *Ann Intern Med*. 2012;157(8):580–585.
13. McHorney CA, Spain CV. Frequency of and reasons for medication non-fulfillment and non-persistence among American adults with chronic disease in 2008. *Health Expect*. 2011;14(3):307–320.
14. Meyerson BE, Ryder PT, Righey-Smith C. Achieving pharmacy-based public health: a call for public health engagement. *Public Health Rep*. 2013;128:140–143.
15. Justin L, Mark S, Weber R. Director's forum: the pharmacy director and accountable care organizations. *Hosp Pharm*. 2011;46(8):621–625.
16. Magnan S, Fisher E, Kindig D, et al. Achieving accountability for health and health care. *Minn Med*. 2012;95:1137–1139.
17. California Pharmacists Association. Provider status is here. [www.cpha.com/Advocacy/Pharmacist Provider Status](http://www.cpha.com/Advocacy/Pharmacist Provider Status). Accessed October 24, 2013.
18. Giorgianni SJ. Full preparation: the Pfizer guide to careers in pharmacy. New York: Pfizer Pharmaceutical Group; 2002:135–139.
19. Avidan AY, Palmer LA, Doan JF, et al. Insomnia medication use and the probability of an accidental event in an older adult population. *Drug Healthc Patient Saf*. 2010;2:225–232.
20. Centers for Disease Control and Prevention. A program guide for public health: partnering with pharmacists in the prevention and control of chronic diseases. Atlanta, GA: Centers for Disease Control and Prevention; 2012.
21. Wilbur K. Pharmacy student perceptions of public health service roles and responsibilities. *Int J Pharm Pract*. 2011;19(3):179–184.
22. Fincham JE. Public health teaching and research in the academy. *Am J Pharm Educ*. 2010;74(5):93.
23. Fincham JE. Global public health and the academy. *Am J Pharm Educ*. 2006;70(1):14.
24. Medina MS, Plaza CM, Stowe CD, et al. Educational outcomes 2013. *Am J Pharm Educ*. 2013;77(8):Article 162.
25. Choi BCK, Pak AWP. Multidisciplinarity, interdisciplinarity, and transdisciplinarity in health research, services, education and policy: 2. Promotors, barriers, and strategies of enhancement. *Clin Invest Med*. 2006;30(6):E224–E232.