

Pharmacists in Public Health

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OBJECTIVES

1. Identify pharmacists' functions on the micro and macro levels in public health.
2. Explain the relevance of and rationale for pharmacists' involvement in public health.
3. List at least three health challenges for the professions of pharmacy and public health.
4. Identify historical developments in pharmacists' public health education (1932–1980).
5. Describe the evolution and progress of pharmacists' public health education (1980–2010).
6. Cite at least three recommendations on including public health in pharmacists' education.
7. Describe professional initiatives regarding public health pharmacy practice.
8. Cite at least three examples of pharmacists' activities and opportunities in public health.

Pharmacy has traditionally been an isolated profession: its ability to break out of its isolation will largely determine the success or otherwise of its public health role in the future.¹

Pharmacists' distinctive contributions to improving public health may best be described as incremental and almost imperceptible.^{1–4} Although the connection between pharmacy and public health has recently received increasing attention, it is not a new concept.

Historically, the product-oriented nature of pharmacy has tended to dominate the profession's emphasis, recorded achievements, and innovations. Moreover, public health as it

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developed in the United States was initially and primarily concerned with sanitation and infection control measures, leaving little opportunity for overlapping interest between pharmacy and public health. Wider acceptance and broader implementation of clinical pharmacy, pharmaceutical care, and medication therapy management marked a shift in the pharmacy profession toward patient-centered models and new perspectives on pharmacists' achievements.

References to links between pharmacy and public health appeared sporadically beginning in the 1930s and became more frequent from the mid-1960s to the early 1990s. Then, in 2004, a flurry of interest began. Professional pharmacy organizations issued position statements and calls to action promoting greater involvement in public health, and the American Public Health Association (APHA) renewed its support for a pharmacist role. Defining how pharmacists are or should be involved in public health and how they might best contribute has come to the fore.¹⁻³ These recent developments compelled us to reflect on pharmacists' traditional role in public health and how it has expanded to meet the growing public need.

Four Questions

There are at least four questions to consider when reflecting on pharmacists' roles. First, is there a real and definable unmet public health need requiring pharmacist involvement in prevention and intervention, and at what level? Second, if so, do pharmacists have skills, expertise, or unique opportunities for filling the unmet public health need? Third, what inherent support is there within pharmacy's professional and educational communities for extending pharmacists' contributions to individual patient health into a broader, population-based effort? Fourth, is there acceptance within the public health community that pharmacists are uniquely qualified and prepared to fill important roles?

Need for Micro- and Macro-Level Functions

In regard to the first question, Bush and Johnson² characterized public health pharmacy services as occurring on micro and macro levels. Micro-level activities emphasizing the well-being of the patient occur frequently; examples are tobacco cessation efforts, immunizations, health screening and referral, health education, patient counseling, and monitoring and responding to adverse drug events in an institution.² In contrast, macro-level functions involve assessment, identification, and prioritization of the public health needs in a community or population. Formulating appropriate policies, plans, and programs to meet those needs; administering and evaluating the health program; and making the necessary improvements and changes at the macro level can support subsequent improvements in community service programs, program evaluation, and research activities. Both micro- and macro-level public health efforts contribute to the desired outcomes of preventing disease, injury, or disability (primary prevention); screening to detect or diagnose disease, injury, or disability (secondary prevention); and treatment to minimize the severity of the disease, injury, or disability (tertiary prevention).

A macro-level public health initiative familiar to most pharmacists is Healthy People 2010 (Sidebar 1-1^{5,6}), which presents a set of national health promotion and disease prevention goals and objectives to be achieved through the efforts of states, communities, professional and nonprofit organizations, and citizens. A broad consultation process was used to identify the most significant preventable threats to health and goals for reducing those threats. The goals and the 467 related objectives are based on the best scientific knowledge and designed to measure programs over time.⁵

Sidebar 1-1 Healthy People

The Healthy People 2010 initiative^{5,6} (a macro-level public health policy) aims to reduce the number of hospital admissions attributable to drug therapy management problems (primary prevention). Policies implemented by individual hospitals allow clinicians to quickly identify such adverse drug events and prevent them from worsening (secondary prevention), as well as treat the affected patients (tertiary prevention). Pooling and evaluating these clinical experiences can lead to the development of dispensing guidelines or utilization studies that can then be used as a primary prevention tool on the macro level.²

An initiative of the U.S. Department of Health and Human Services, Healthy People 2010 provides a detailed agenda for health promotion and disease prevention. Broadly stated, its two goals are to increase the quality and years of healthy life for individuals of all ages and to eliminate health disparities among different regions of the country and segments of the population.⁵ Because states and communities have the most immediate and direct responsibility for maintaining and promoting public health, it is important that policy makers and implementers at these levels understand and tie into Healthy People 2010's objectives, leading health indicators, and primary focus areas to coordinate efforts throughout the public spectrum.

Within the pharmacy community, Healthy People 2010 has garnered much attention to and support for pharmacist participation in achieving the objectives of improving quality of life and eliminating health disparities.⁷⁻¹¹ Although pharmacists are capable of contributing to many of Healthy People 2010's 28 focus areas (e.g., diabetes, HIV, immunization and infectious disease, tobacco use) and other public health issues detailed in later chapters of this book, objectives that enhance medication safety and optimize medication outcomes are a logical domain for pharmacists. Individual pharmacists are comfortable addressing drug safety at the micro level, yet addressing it at the macro level is "extremely important in protecting lives and decreasing health care costs."⁸

Developments related to health care reform, key circumstances within the profession, and critical workforce and demographic elements are now creating a "perfect storm." Many of today's challenges are directly and indirectly attributable to the epidemiological shift from acute to chronic diseases over the past 50 years. From either a medication or a patient perspective, highlighting a few indicators of the current public health challenge can begin to define its scope and magnitude.¹²⁻¹⁷

- In 2008, 3.8 billion (3,843,100,000) prescriptions were dispensed in the United States.¹²
- 82% of Americans reported using prescription medications, nonprescription medications, or supplements in the previous week, and 30% reported using five or more of them in the previous week.¹³
- 51% of insured Americans were taking prescription drugs to treat at least one chronic health problem.¹⁴
- 1.5 million people are injured each year as a result of medications, with nearly 25% of ambulatory patients reporting an adverse drug event.¹⁵
- 33% of U.S. adults who have been prescribed drugs to take on a regular basis report that they are often or very often noncompliant with their treatment regimens.¹⁶

- 45% failed to take their medications because of concerns they had about the drugs themselves.¹⁶
- 43% reported having not complied with their regimens because they believed the drug was unnecessary.¹⁶
- For every dollar spent on ambulatory care medications, another dollar is spent to treat new health problems caused by the medication.¹⁵
- 5% of Americans account for 49% of all health care expenditures in the United States.¹⁷

These circumstances pose a daunting challenge for pharmacy and the public's health. The U.S. population is living longer; older adults use more medications than other Americans, and this consumption is on the rise. Older adults make up 12.5% of the U.S. population, yet they account for 32% of all prescription medication use, 25% of drug expenditures, and 30% of the nation's health care costs.^{18,19} In addition, the prevalence of chronic disease in this country is increasing, with 47% of the population having a chronic condition and 22% having multiple chronic conditions.¹³ Outpatient drug use is becoming much more complicated and risky. Trends include the delivery of more health services in the outpatient setting and the increasing use of potent new prescription medications, as well as increases in the type and number of medications a patient takes. The Institute of Medicine's *To Err Is Human: Building a Safer Health System* emphasized that the safety and quality risks associated with medications are severe;¹⁵ adverse health care events continue to be a leading cause of death and injury. Thus, the answer to our first question, regarding the existence of an identifiable public health threat requiring pharmacists' intervention, is affirmative. There is indeed an unmet need that must be dealt with at multiple levels and in multiple jurisdictions.

Can Pharmacists Fill the Need?

The second question entails whether pharmacists have skills, expertise, or unique opportunities for meeting an unmet public health need and, if so, whether there is a will among pharmacists and pharmacy's professional and educational communities to do so. The sheer size of the population taking medication, the billions of prescription and nonprescription medications consumed annually, and the complexity of medication use among an increasing number of Americans point to a role for pharmacists in reducing the negative and unintended consequences of medication use in their daily practice. Moreover, surveys of pharmacists and pharmacy students show that they clearly are interested in integrating preventive health care into their practices.²⁰⁻²²

The survey responses align well with the Code of Ethics for Pharmacists,²³ which states that the pharmacist "serves individual, community, and societal needs" and recognizes and acts in accordance with these obligations. The Code of Ethics further states that the pharmacist "seeks justice in the distribution of health resources." The intent of pharmacists to contribute to public health also aligns well with the philosophy of pharmaceutical care and its expansion to medication therapy management (MTM).^{24,25} By definition, "Pharmaceutical care is the direct, responsible provision of medication-related care for the purpose of achieving definite outcomes that improve a patient's quality of life."²⁴ These outcomes include curing a disease, eliminating or reducing symptoms, arresting or slowing a disease process, and preventing a disease. MTM refers to the services provided by pharmacists to optimize therapeutic outcomes for individual patients; the term is often used to describe the role of the pharmacist in patient care.²⁵ MTM services are built upon the philosophy and process of pharmaceutical care. Recognizing the pharmacist's role and responsibility as the medication therapy expert on the health care team, the profession has used the

term MTM to describe pharmacists' service to patients since the achievement of a professionwide consensus definition in 2004.^{25,26}

Support within and beyond the Profession

By meeting these expectations expressed by themselves and the profession, pharmacists put themselves on par with other health professionals as full participants in the care of patients. Well-suited to provide the vital component of therapeutically effective and safe medication use, pharmacists contribute to the broader goals of providing access to quality health care services, promoting the public health overall, and maximizing limited health care resources. Numerous pharmacy organizations confirm pharmacists as the medication experts best suited to address these goals.^{6,9,27-30} The American Association of Colleges of Pharmacy Center for the Advancement of Pharmaceutical Education, the American College of Clinical Pharmacy, the American Pharmacists Association, the American Society of Health-System Pharmacists, the Joint Commission of Pharmacy Practitioners, and others have issued policy and outcomes statements, developed white papers, or called for action to endorse activities of public health pharmacists.

Groups outside the profession have also acknowledged pharmacists' expertise and integrity. An American Public Health Association (APHA) 2006 policy statement confirms that "[t]here are many functions of public health that can benefit from pharmacists' unique expertise that may include pharmacotherapy, access to care, and prevention services. Apart from dispensing medicine, pharmacists have proven to be an accessible resource for health and medication information."⁸ In addition to APHA's recognition of the expanding role of the pharmacist in population-based health care, the public has repeatedly expressed confidence in pharmacists; more than two-thirds of Gallup poll respondents have consistently rated the honesty and ethical standards of pharmacists as high or very high.³¹ This unequivocal show of support answers the third question.

Workforce Projections

The last of our four questions is whether there is a need within the public health workforce that pharmacists are uniquely qualified and prepared to fill. An associated question is whether there will be enough pharmacists available to meet the need.

As estimated by APHA and the Association of Schools of Public Health (ASPH), the immediate need for and projected shortfall of public health workers is sobering. According to APHA, the number of public health workers per 100,000 population has declined from 220 in 1980 to 158 today, and up to half of the federal and state public health workforce could be lost to retirement and salary disparities between the public and private sectors in the next few years. ASPH estimates that 23% of the current workforce—almost 110,000 workers—will become eligible to retire by 2012 and predicts that more than 250,000 additional public health workers will be needed by 2020.^{32,33} Both organizations cite the supply of public health professionals being trained as inadequate; the number being educated cannot keep pace with current and potential attrition. Shortages of public health physicians, public health nurses, pharmacists, epidemiologists, health care educators, and administrators are expected.³²⁻³⁴

These current and future shortages are perhaps the most compelling argument for expansion of pharmacists' presence in the public health workforce. Public health pharmacists are currently employed throughout the United States (Table 1-1), but they are difficult

TABLE 1-1 HRSA Public Health Pharmacist Workforce Enumeration 2000^a

HRSA Region	State or Territory	No. Pharmacists			Total
		State or Territory	Local	Unspecified	
II	New York		3		3
II	Puerto Rico	19			19
III	Pennsylvania	1	12		13
IV	Alabama	3			3
IV	Florida	32			32
IV	Kentucky	6			6
IV	Mississippi	6			6
IV	North Carolina	1	24		25
IV	South Carolina			48	
V	Wisconsin	1			1
VI	Arkansas	7			7
VI	Louisiana	8			8
VI	New Mexico	2			2
VI	Texas			58	58
VII	Kansas	27			27
VIII	South Dakota	2			2
VIII	Utah	1			1
IX	California	55			55
	Total	171	39	106	316

HRSA = Health Resources and Services Administration.

^aNumbers include civilian pharmacists working in public health in governmental and non-governmental organizations at a state or territorial, local, or unspecified level.

Source: Reference 34.

to identify, in part because of a lack of consistent data collection, no standard definition, and the fact that a number of pharmacists are simply counted as general public health employees. It is estimated that pharmacists make up less than 1% of the public health workforce.³⁴

Of the estimated 448,254 public health workers identified by the Health Resources and Services Administration Public Health Workforce Enumeration 2000, there were 1496 public health pharmacists (1180 federal and 316 state, local, and territorial). The federal pharmacists were distributed as follows: 410 Department of Health and Human Services employees, 736 Public Health Service (PHS) Commissioned Corps, 25 assigned to the Environmental Protection Agency, and 6 and 3 within the Department of Agriculture and Department of Justice, respectively. Pharmacists, then, represent an underused resource for increasing the nation's public health workforce.^{8,9,33-35}

Collecting information about public health pharmacists has been difficult in the past. A 1997 PHS study identified the need to have standard definitions of public health work-

force occupations, including public health pharmacist, and recommended revising the Federal Standard Operating Classification System.³⁶ Definitions were created for the purpose of enumerating the public health workforce in 2000, since none existed; the public health pharmacist definition described both micro- and macro-level functions (Sidebar 1-2).³⁴ In the 2003 Institute of Medicine publication *Who Will Keep the Public Healthy: Educating Public Health Professionals in the 21st Century*, a public health professional was defined as “a person educated in public health or a related discipline who is employed to improve health through a population focus.”³⁷ Yet, as noted in the APHA 2006 policy statement, “Pharmacists are not formally classified as a profession within the public health workforce, unlike public health nutritionists, nurses, and physicians.” In an APHA issue brief released 2 months before the policy statement, pharmacists were not mentioned.³⁸ The public health role of the pharmacist has yet to be clearly defined, broadly recognized, and sufficiently promoted by public health agencies, pharmacy educators, or other health care professionals.⁸

So the question remains: Will there be enough pharmacists in the public health workforce to supply the available need? The answer depends largely on an assessment of the perceived and projected number of pharmacists in their more traditional roles and the desire of pharmacists to move into the public health field. As a consequence of the aging population and passage of the 2003 Medicare Modernization Act establishing Medicare Part D prescription drug coverage, the need for pharmacists has expanded. As a result of congressional action calling for analysis of the pharmacy workforce and the associated implications for education, the Health Resources and Services Administration (HRSA) Bureau of Health Professions created the Pharmacist Supply and Requirements Model to forecast differences between supply and demand and project the adequacy of the U.S. pharmacist supply.³⁹

Using this model, HRSA issued a report on the pharmacist supply for the period from 2004 to 2030. It predicted at best a continued moderate shortfall of pharmacists in the near term of at least 5%, 1.4% annual growth in pharmacist demand due to population growth, and up to an additional 2% annual increase in pharmacist demand should per capita pharmaceutical consumption increase. The number of pharmacists is sufficient to meet demand only if an optimistic supply projection and a conservative demand projection are used.³⁹ It appears that the number of pharmacists will be insufficient to meet the usual demands of the profession, much less to expand further into public health.

The development and use of the supply model parallel the three core public health functions: assessment, policy development, and assurance. Congress proposed the study and HRSA completed the assessment; what remains is the assurance of access to quality health care. Given the HRSA projections, further policy development will be required at the macro

Sidebar 1-2 Public Health Pharmacist Definition³⁴

Combines pharmacy and public health skills to plan, organize, manage, and perform drug-related activities with a specific public health focus or within a public health setting; may work in agency-run pharmacies or serve as the liaison between private pharmacies and the public health agency in regard to standards, procedures, and education. Dispenses drugs prescribed by physicians and other health practitioners and provides information to patients about medications and their use. May advise physicians and other health practitioners on the selection, dosage, interactions, and side effects of medications.

level to ensure continued access to health care at the micro level. Policies to enhance and expand training, education, practice, and innovations in health care delivery will present pharmacists and professional organizations with both challenges and opportunities. Although some may believe that political, professional, or economic inertia will block any meaningful change and that current obstacles cannot be overcome, pharmacy and public health leaders, policy makers, and professionals can point to public health successes such as pharmacists' expanded role in immunization; as of 2009, all 50 states authorize pharmacist-delivered immunizations.

Public Health in Pharmacy Education

Bush and Johnson² stated 30 years ago that “both the public and the profession of pharmacy benefit from public health pharmacists, but pharmacy education has failed to recognize the potential for pharmacists in public health as well as to acquaint pharmacy students and practitioners with role models in public health.” They said the pharmacy profession needed to avoid a “parochial view” and to train pharmacists in population health for the benefit of both the profession and society.

During the past three decades there have been educational and professional initiatives to promote and recognize the role of the pharmacist in public health. The Center for the Advancement of Pharmaceutical Education includes public health as one of three major categories of educational outcomes for pharmacists.²⁷ The American Public Health Association has adopted two policy statements (1980 and 2006) on the role of the pharmacist in public health.^{7,40} Increasing numbers of pharmacists have become involved at both micro and macro levels in public health activities. Schools and colleges of pharmacy have included public health content in pharmacy curricula. Still, the extent to which public health has been integrated into pharmacy education is unclear. In spite of some educational and professional progress, greater effort to train public health pharmacists is needed.

This section on public health in pharmacy education is divided into three parts corresponding to key developments in professional and educational initiatives. The first part briefly covers the period from 1932 to 1980. The next two parts discuss progress since 1980 toward the inclusion of public health in pharmacy education and provide recommendations for schools and colleges of pharmacy.

Historical Perspective

Prior to 1979, there were attempts to include public health in pharmacy practice and education. Gibson^{41–43} reviewed the literature and professional efforts and conducted a survey on public health education in colleges of pharmacy. Although it was mentioned in the fourth edition of *The Pharmaceutical Syllabus* in 1932, public health received “rather scant attention by pharmaceutical education” until years later.^{41–43} In 1964, the American Pharmaceutical Association (now the American Pharmacists Association) published a study of the feasibility of using pharmacies as distributors of health literature.⁴⁴ The following year, the American Association of Colleges of Pharmacy (AACP) held a seminar to discuss “the public health curricula in colleges of pharmacy.”⁴⁵ In 1972, Gibson conducted the first survey of public health instruction in colleges of pharmacy and tested graduating seniors in 67 participating colleges to assess their educational preparation in public health.^{41–43} The survey results suggested that pharmacy education suffered from “the lack of a definition of public health in pharmacy (or pharmacy in public health), the lack of perceived relevance to pharmacy students, the lack of a textbook focusing on the role of pharmacy in public health, the lack of pharmacy faculty educated in and with appropriate experience to teach public health, and

the lack of sites where students could become involved with public health projects, and work, with public health personnel.”² At that time, the standards of the American Council on Pharmaceutical Education (now called the Accreditation Council for Pharmacy Education [ACPE]) provided guidance for the development of public health pharmacy courses. Examples of content areas included social and behavioral sciences and management of pharmaceutical services such as pharmacy practice, health care delivery systems, and drug-utilization review and control.⁴⁶ The Subcommittee Report on Social and Behavior Sciences in the 1978 AACP Report of the Committee for Establishing Standards for Undergraduate Education in Pharmacy Administration discussed these content areas.⁴⁷ However, most public health content was taught in bits and pieces in pharmacy education. Bush and Johnson stated that “Just as the role of public health pharmacy gets lost in a set of roles, training in public health pharmacy gets lost in the traditional elements of the pharmacy curriculum.”²

Having identified the lack of public health content in pharmacy education, Bush and Johnson provided recommendations in 1979 for addressing this, such as developing competency-based curricula, publishing a text on the pharmacist’s role in public health and the organization of health care, exposing students to adequate role models, encouraging an increase in the number of pharmacists who obtain the master’s degree in public health, and developing logical roles for public health pharmacists at both the micro and macro levels.² The following year, APHA released its first position paper on pharmacists’ role in public health and encouraged formal education of pharmacists in public health.^{40,48}

Progress through the Present

Over the past 30 years, there have been professional and interprofessional educational efforts to prepare pharmacists for their role in public health. Some schools or colleges of pharmacy have taught students both patient-centered and population-based concepts and applications through didactic coursework and experiential education. There has been an increase in school-required service learning and student-initiated community outreach activities in public health. Some institutions have offered concurrent training (e.g., public health certificate or minor, Doctor of Pharmacy/Master of Public Health [PharmD/MPH] dual-degree program) or advanced educational opportunities (e.g., public health residency or fellowship). However, public health content has yet to be fully integrated throughout pharmacy school curricula.

The Center for the Advancement of Pharmaceutical Education (CAPE) educational outcomes were developed in 1994 and were revised in 2004 with “similar language to other competency/outcomes documents in the health professions”; the Joint Commission of Pharmacy Practitioners “desired future” vision was used as background.²⁷ The CAPE educational outcomes include a clear emphasis on public health, as shown in Table 1-2. ACPE included competencies related to public health in its 2007 Standards and Guidelines,⁴⁹ specifically in Standard 12 for the didactic curriculum and Standard 14 and Appendix C for pharmacy practice experiences (Table 1-2).

In addition, pharmacists’ licensure examinations include material on public health. The mission of the National Association of Boards of Pharmacy, the umbrella organization for state boards, is to protect public health through state licensure. About 11% of the North American Pharmacy Licensure Examination is in the content area titled “Provide Health Care Information and Promote Public Health.”^{50,51}

The 2003 Institute of Medicine (IOM) report *Health Professions Education: A Bridge to Quality* listed five core competencies for health care professionals: delivering patient-centered care, working as part of an interdisciplinary team, practicing evidence-based medicine, focusing on quality improvement, and using informational technology.⁵² Although

TABLE 1-2 Professional and Educational Initiatives Promoting and Supporting Public Health in Pharmacy Practice and Education**American Public Health Association (APHA) Position Paper
“The Role of the Pharmacist in Public Health” (1980)*****Recommendations for public health pharmacists’ activities***

- Participation in health planning activities
- Involvement in personal health services delivery
- Counseling, educating, and screening patients
- Participation in the legislative and regulatory processes
- Encouragement of formal educational training in public health

**American Public Health Association (APHA) Policy Statement
“The Role of the Pharmacist in Public Health” (2006)*****Statement of the problem***

- Moving from product-oriented functions to patient-oriented administrative and public health functions
- Pharmacists’ unique expertise, including pharmacotherapy, access to care, prevention services
- Pharmacists’ accessibility as a resource for health and medication information
- Re-examination and integration of public health practice into pharmacologic training and pharmaceutical care
- Cross-training to maximize resources and address workforce needs within both pharmacy and public health

Purpose

- Review APHA’s historical support of the pharmacist’s role in public health
- Provide leadership and guidance in identifying and promoting the pharmacist’s current and future role in public health
- Describe the framework for maximizing this function
- Through interdisciplinary approaches, achieve optimal public health outcomes; pharmacists’ contributions include
 - Public health workforce
 - Health education
 - Health promotion and disease prevention
 - Public health advocacy
 - Health quality

Desired actions

- Greater inclusion of public health concepts in the curricula of schools of pharmacy, as well as the development of more joint Doctor of Pharmacy/Master of Public Health programs;
- Increased awareness of the role of pharmacists in public health through the dissemination of information among schools of public health, professional societies, policy makers, and other health care employers;
- Transdisciplinary collaborations of health planning agencies, schools of public health, schools of pharmacy, public health agencies, policy makers, and pharmacy and public health professionals to develop legislation and advocate for plans that address health care needs spanning from local to worldwide;